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THE ENGINEERING AND MINING JOURNAL

VOL. L, No. 15 NEW YORK, SATURDAY, OCTOBER 11, 1890. PRICE 10 CENTS

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SEE PAGE XXVI.

Advertisers in the "Engineering and Mining Journal" should not fail to read the special notice on page XII.

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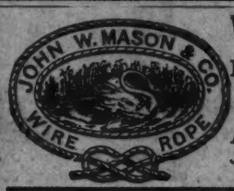

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CHICAGO, Aug. 6, 1890.
To the Magnolia Anti-Friction Metal Co., 74 Cortlandt Street, New York City:

GENTLEMEN: Some months since we had a great deal of difficulty with our Ball engine running with bearings he and used a great deal oil without causing th bearings to become an cooler by increasing th amount of oil used upon the bearings.

The Ball engine is 100 horse power, 14 by 13 inches, 270 revolutions per minute and carries 90 pounds steam pressure.

Bearings 4⅜ inches diameter by 4 inches in length. There is about 1-32 inch play allowed in the bearings, and makes a very close fit.

We have had the most excellent results from the us of your Magnolia metal, and could not ask for bette service. We trust that this report will be explicit and pleasing to you. We remain,

Yours truly,
THE WESTERN LIGHT AND POWER CO.
By W. M. Talcott, General Manager.

DIAMOND PROSPECTING DRILLS QUARRYING MACHINERY.
See Card of DIAMOND PROSPECTING CO., page xxix

MINING, MILLING, MARINE MACHINERY OF EVERY KIND. UNION IRON WORKS, S. F.
See Page xxvii

Messrs. AUGUST BELMONT & CO., New York.

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SUBSCRIPTION FOR $5,000,000

Of Eight per Cent. Cumulative Preferred Stock.

THE NATIONAL CORDAGE CO.,

Incorporated under the Laws of the State of New Jersey.

DIRECTORS:

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CAPITAL STOCK, $15,000,000,

Divided into 50,000 shares 8 per cent. Cumulative Preferred Stock of $100 each, - - - - - - $5,000,000.
100,000 shares Common Stock, all of which has been issued as full paid stock, of $100 each, - - 10,000,000.

The Preferred Stock now offered is issued full paid for cash, is non-assessable, and carries no personal liability to stockholders.

The Company has no bonded or mortgage debt, and the creation of any such debt, except with the consent of holders of record of at least eighty per cent. (80 per cent.) of the preferred stock, is prohibited by by-law.

The Preferred Stock is entitled to a preferential cumulative dividend **OF 8 PER CENT.** per annum, accruing from Nov. 1, 1890, and payable out of the net earnings of the Company before any dividends are paid upon the Common Stock, and the Preferred Stock will also have priority over the Common Stock, in respect of all property and assets of the Company, in case of liquidation or dissolution.

The two classes of stock have the same voting power per share.

Preferred dividends will be payable quarterly on the first days of November, February, May and August of each year, and the transfer books will close fifteen days prior to the date of payment.

Both classes of stock will be registered at the office of the Farmers' Loan and Trust Company, of New York, and application will be made to list them on the New York, Boston and Chicago Stock Exchanges.

After the payment of 8 per cent cumulative on the Preferred Stock and 12 per cent non-cumulative on the Common Stock, and the reservation of such surplus as may be determined by the Board of Directors of the Company, any further dividends will be divided *pro rata* between the two classes.

The organization of the Company and the legal validity of the Preferred Stock issue now offered have been submitted by the Bankers to their counsel respectively, and approved, as will appear from the following opinions:

OPINIONS OF COUNSEL.

DREXEL BUILDING, NEW YORK, Oct. 9, 1890.

To Messrs. AUGUST BELMONT & CO.:

We have, as requested by you, examined the organization of the National Cordage Company and its issue of Preferred Stock. It is our opinion that the organization is regular and the stock issue valid, and that the holders of said stock will be legally secure in the rights and immunities set forth in your Prospectus of this date.

LOW, REY, STONE & AUERBACH.

54 WALL ST., NEW YORK, Oct. 9, 1890.

Messrs. VERMILYE & CO.:

GENTLEMEN: We have investigated the organization of the National Cordage Company and the proceedings attending its issue of Preferred Stock.

We advise you that the organization of the Company and the issue of Preferred Stock are valid in law, and that the holders of such stock will be entitled to the privileges and immunities stated in the Prospectus.

Very truly,

BUTLER, STILLMAN & HUBBARD.

PROSPECTUS.

THE NATIONAL CORDAGE COMPANY is a corporation organized under the laws of the State of New Jersey for the importation of hemp and the manufacture and sale of cordage.

This industry is staple, and one of the oldest in the United States. The volume of the business has increased rapidly during the past twenty years, and under the present plan of operations should be capable of still more profitable expansion, *while furnishing as cheap, if not cheaper product to the consumer.*

The Company, in addition to its large working capital, has contracts for the fee of the following manufacturing properties, which are now under lease to it, free of mortgage or other incumbrance:

L. WATERBURY & CO., Brooklyn, N. Y.
WILLIAM WALL'S SONS, Brooklyn, N. Y.
ELIZABETHPORT CORDAGE CO., Elizabethport, N. J.
THE TUCKER & CARTER CORDAGE CO., Brooklyn, N. Y.
GEO. C. POOLEY & SONS, Buffalo, N. Y.
XENIA TWINE AND CORDAGE CO., Xenia, Ohio.
J. RINEK'S SONS, Easton, Penn.
AKRON TWINE AND CORDAGE CO., Akron, Ohio.

In addition to which the Company controls the manufacturing properties of the
VICTORIA CORDAGE CO., Dayton, Ky.
H. R. LEWIS & CO., Philadelphia, Penn.
BAUMGARDNER, WOODWARD & CO., Philadelphia, Penn.
NEW YORK CORDAGE CO., New York City.
ATLAS CORDAGE CO., New Orleans, La.
RANDALL, GOODALE & CO., Boston, Mass.

Many of these concerns have been in business for half a century, and are well known to the business community of this and other cities.

The proceeds of the Preferred Stock will be paid over to the Company, to be applied by it to the consummation of these several contracts, and to other purposes determined by the corporation.

With the exception of the four manufacturing properties last mentioned, the former managers or proprietors of the several concerns are under contracts with the Company for long terms to run the respective mills under a system of competitive bids, the raw material being furnished by the company and awards being made to the lowest bidders. The contractors, whether successful or unsuccessful in bidding, are under obligation by the same contracts to maintain the mills at their own expense in a fit state of efficiency for the next annual competitive bid, in which they are obliged to take part. The Company is thus under no expense for idle mills, while the skill of the business is retained. All the economies of consolidation are secured by this plan of organization, as well as the wholesome effect of free and keen competition among the manufacturers, resulting in lower prices to the public without decreasing the profit to the Company.

The Company buys a very large percentage of all the fibre used in this country for cordage and binder twine. On this account it has great influence in the markets of the world for fibre, and the size of its contracts with the producing countries enables the Company to obtain correspondingly favorable prices.

The Company has in addition other valuable contracts and concessions.

A Committee composed of the President, the Secretary, and three Directors of the Company has during August of this year inventoried the assets of the Company and reported to the stockholders that the value of the assets, exclusive of the proceeds of the $5,000,000 Preferred Stock to be issued, is $12,000,000 and upwards, over and above all liabilities.

Affidavits of the foregoing Committee, submitted to the bankers, and which are satisfactory to them, are the basis for the essential statements of facts herein concerning the character and volume of business of the corporation, its assets and method of operations; and, in the opinion of the undersigned, fully justify these statements and the conclusions drawn from them.

The affidavits further show that the annual aggregate profits of the several concerns for the past ten years have been more than enough to pay the annual dividend on the Preferred Stock and leave a very large surplus, notwithstanding the fact that during some of that period the interests now consolidated were in competition of a character now avoided.

The Committee further certifies that at no time within the past twenty-five years have the aggregate annual profits of the several concerns been insufficient to pay the 8 per cent. dividend on the Preferred Stock, although the consumption of cordage at the beginning of that period was only one-quarter what it is to-day.

The Common Stock remains in the possession of those interested in the property and management.

By direction and on behalf of the Corporation we invite subscriptions to the above-mentioned Preferred Stock **AT PAR**, payable as follows:

5 PER CENT. ON APPLICATION.
25 PER CENT. ON ALLOTMENT.
35 PER CENT. ON NOVEMBER 3.
35 PER CENT. ON NOVEMBER 17.

Allottees will have the option of paying in full on allotment, and interest on the anticipated payment will be allowed at the rate of 4 per cent. per annum.

Temporary receipts will be given by the Bankers for installments as paid, exchangeable into preferred stock on November 17, the date fixed for the payment of the final installment.

The right is reserved to reject any subscriptions and to make allotments of less amounts than the amounts applied for. In allotment preference will be given to dealers in cordage and others more directly interested in the business. If the whole amount applied for by any applicant be not allotted, the surplus amount paid on application will be applied upon the sums due on the allotment. When no allotment is made, the deposit will be returned in full.

Failure to make payment of any installment may operate as a forfeiture of all previous payments.

The Subscription List will be opened simultaneously at Ten o'clock A. M., on TUESDAY, the 14th day of October, and close at Three o'clock P. M. on WEDNESDAY, the 15th day of October, 1890, at the offices of

AUGUST BELMONT & CO., 23 Nassau Street, New York;
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And by FRANKLIN TRUST CO., Brooklyn, N. Y.; INTERNATIONAL BANK, Chicago, Ill.; FIRST NATIONAL BANK, Cincinnati, Ohio; NATIONAL BANK OF COMMERCE, St. Louis.

Prospectuses and forms of application can be obtained at the offices above mentioned, where subscriptions will be received.

The subscription for the entire amount of the Preferred Stock above offered has been guaranteed by underwriters in this country and abroad.

NEW YORK, Oct. 9, 1890.

THE ENGINEERING AND MINING JOURNAL.

COAL

Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. L. OCTOBER 11. No. 15.

RICHARD P. ROTHWELL, C.E, M.E., Editor.

ROSSITER W. RAYMOND Ph.D., M.E. Special Contributor.

Cable Address: "Rothwell, New York." Use A. B. C. Code, Fourth Edition

London: 76 Finsbury Pavement, London, E. C., Mr. Thomas B. Provis, Civ and Mining Engineer, Manager.

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THE recent formation of the Mining Institute of the Seventh Bituminous District of Pennsylvania is a step in the right direction. Institutes of a similar nature have proved themselves to be a means of education and protection to the miner, while to the employer they are indirectly a source of profit. In disseminating technical information among their members, and affording opportunities for an interchange of ideas and experiences, they enlarge the miner's stock of knowledge, and act as incentives to practical research in the science of mining. They are a protection, inasmuch as they materially assist in securing the passage and enactment of practical mine laws, and in defeating pernicious and dangerous measures. They should be encouraged by both mine employers and employés.

MR. JOSEPH M. HIRSH, the chemist who claims to have a process for extracting aluminum from common clay (see ENGINEERING AND MINING JOURNAL, August 30th and September 13th) has again been heard from. This time he is alleged to have confided his process to a Chicago newspaper reporter, whom he first swears to secrecy. He is quoted as saying: "I have solved the problem of extracting the metal (aluminum) from an *aqueous* solution; the process has been so simplified that it is exceedingly cheap (a few cents a pound), and requires but little labor." In the face of this statement of the simplicity and cheapness of the process, Prof. HIRSH is taking steps to receive the benefit of a very extensive backing; the Chicago Aluminum Company, which he is organizing, is to be capitalized at $1,000,000. Prof. HIRSH may have a process for manufacturing aluminum, but until he explains to the scientific world the manner in which he proposes to obtain aluminum from an "aqueous solution of common clay," he will not receive much credence among chemists, nor, it is to be hoped, much support among capitalists.

We have received a long and irrelevant communication from Mr. HIRSH, which in no way replies to the doubts cast upon the character of his enterprise. So far as our investigations have gone, we have no reason to modify our advice to investors that this is an excellent thing to let alone.

THE ORIGIN OF PETROLEUM.

Although some of the geological text books dispose of this question in off-hand fashion, there is still a good deal to be said in favor of or against the various theories which have been advanced. The case is an open one, and calls for further investigation before definite conclusions can be reached which will meet with general acceptance. Very possibly the final outcome of the discussion may be a concession that petroleum has originated in more than one way, and this would at least account for the marked differences in composition and mode of occurrence, which have been so puzzling to the advocates of single hypothesis.

The latest contribution to the literature of the subject is an essay by Professor EDWARD ORTON, on "The Trenton Limestone as a Source of Petroleum and Inflammable Gas in Ohio and Indiana." The first chapter of this essay reviews the theories as to the origin of oil and natural gas which have been proposed. Professor ORTON rejects the distillation hypothesis, which was adopted by Professor S. F. PECKHAM in his monograph on petroleum, and by many other authorities. He agrees in the main with Dr. T. STERRY HUNT, and his conclusions are formulated as follows: 1. Petroleum is derived from organic matter. 2. It is more largely derived from vegetable than animal substances. 3. Petroleum of the Pennsylvania type is derived from the organic matter of bituminous shales and is of vegetable origin. 4. Petroleum of the Canada and Lima type is derived from limestones and is of animal origin. 5. Petroleum has been produced at normal rock temperatures (in Ohio fields) and is not a product of destructive distillation of bituminous shales. 6. The stock of petroleum in the rocks is already practically complete.

It is hardly likely that a solution of the problem would be of much service as a guide to the petroleum prospector; but the matter is one of decided interest geologically, apart from any economic bearing. It is evident from the divergence of current views that present knowledge as to the history of both oil and natural gas leaves much to be desired, and hence studies like those of the Ohio geologist cannot fail to be appreciated. We would like to get some absolute knowledge about petroleum before it is all gone.

THE VISIT OF THE FOREIGN IRON MASTERS.

The meeting of the foreign ironmasters in this country has advanced another week, and those who have attended it must be more than ever convinced of the warmth of the good will with which they are everywhere welcomed. Unquestionably this meeting will be full of benefit to both our guests and ourselves. Nothing so greatly promotes good will and respect for the rights of others as free interchange of views, and while the foreign iron and steel industries will undoubtedly become more formidable rivals for our manufacturers through the adoption of some features of our American practice, yet this country will gain enormously by the better appreciation which our guests will get of our boundless resources and of the inevitable commercial supremacy which is our future in the industries they represent.

Many of these gentlemen will undoubtedly see that the rising industry is the one to invest in and be associated with, and that the United States offer inducements for the investment of capital and intelligence greater than can be found in any other country on the globe. It is certain that many of these guests or their sons will come to stay with us, and will bring with them vast amounts of capital to aid in the development of that industrial supremacy which they must admit our natural advantages and an energetic and intelligent population assure to us.

The arrangements for the entertainment of our guests at all points they visit are on the most magnificent scale, but those for the handling of such a large number of persons in a single party having been administered for the most part by amateurs, have been in some respects defective. Moreover, it is, in our opinion, a fundamental error to keep so large a party together. The interests of the guests are many; a certain number desire to visit coal mines only, another party may be interested only in the manufacture of agricultural implements; still another wishes to investigate thoroughly our blast furnace practice only, and so on. It would no doubt be better to divide the party into a number, perhaps even ten or twelve subdivisions made up of those who have a com-

mon object in view, each of which subdivisions would be accompanied by some of our own members, experts in the specialties under examination, the transportation and hotel arrangements being under the direction of professional "conductors" accustomed to that special business. The subdivisions could, if desired, rendezvous at certain points where public entertainment required, and the members would afterward be able to exchange expert views concerning the resources of the country which had been examined much more fully than is possible where so many go in a single party. Some of the party have already broken loose from the great train in order to see more freely the special objects in which they are interested, thus demonstrating the desirability of the plan we suggest.

Notwithstanding the partial breakdown of the transportation and hotel arrangements at New York, Philadelphia and Pittsburg, too great praise cannot be given to the amateur members of the committees who devoted themselves day and night to the accomplishment of the herculean work they had undertaken.

MR. HEWITT'S VIEWS ON HOW TO HARMONIZE LABOR AND CAPITAL.

On another page we give extracts from the address of the Hon. ABRAM S. HEWITT, President of the American Institute of Mining Engineers, at the meeting in this city of the British Iron and Steel Institute and the Verein Deutscher Eisenheuttenleute. We greatly regret that the limited space at our command forbids our publishing this admirable address in full, but we cannot refrain from giving Mr. HEWITT's views upon the solution of the labor question and the means of preventing strikes. Mr. HEWITT paid a graceful and glowing tribute to the British Iron and Steel Institute for the admirable work it has done and is doing in inaugurating and practicing the full interchange of experience and ideas in the iron industry, by which "the tone of the trade has been raised to a plane of intelligence and liberality which would have been absolutely incomprehensible to the past generation, and which opens for those who are to come after us a new world of generous competition in promoting the welfare of the race."

After sketching the progress of the trade since its commencement in this country, Mr. HEWITT showed that at the same rate of increase the world will consume in the year 1900 no less than "35,000,000 gross tons of iron, of which the United States must supply 45 per cent.," and he answers in the affirmative the question, "Can this country nearly double its production of iron in the next ten years without so seriously increasing the present cost of iron as to restrict its consumption and arrest the rate of progress at which the world is now moving forward?"

"The production of iron involves the five elements of fuel, ores, capital, labor and skill." Mr. HEWITT showed that the United States are abundantly equipped with all these elements, but the final answer to the question "depends upon the establishment and maintenance of friendly relations between the employers and employed engaged in the work of production."

We quote elsewhere Mr. HEWITT's profound and admiral views as to the manner of bringing about these friendly relations, and we commend their perusal to our readers. Mr. HEWITT is not only a large employer of labor, but he is a statesman and philanthropist, who has carefully studied and considered this most important problem. The conclusions of such a man are therefore of great interest and value to every one, for they throw much light upon the practical solution of the most important problem of modern civilization.

It is quite possible that many of our readers will not agree with Mr. HEWITT in his optimistic views as to the impossibility of maintaining monopolies in this country, nor with him when he says, in referring to the trusts and combinations that we are all unfortunately too familiar with, that "no oppression is possible, and no exaction can be continued under the scrutiny of an omnipresent and omniscient journalism."

It is true that this journalism is a potent element of defense for the people against these monopolies, and in the end, though usually only after these have for years been "preying upon the public by excessive prices," the journals so create and emphasize public opinion that laws are made for the protection of the public from particular abuses. In the meantime other "trusts" or monopolies are organized to take the places of those overthrown. As Mr. HEWITT well says: "The discouraging feature of the time is that the legislative department has shown not merely indifference, but abject cowardice in dealing with the questions which, from time to time, require the interpretation of the law."

Mr. HEWITT might well have gone further and have said that perhaps the greatest danger the public weal is subjected to is in the very strength and influence of these same combinations and "trusts" in influencing legislation in such a way as to enable them to exact exorbitant prices from the public and perpetuate their rule. See, for example, the tariff bill recently enacted. The "omniscient journals," unfortunately, are too often controlled by the "trusts" and monopolies, and are then potent instruments in effecting and perpetuating these abuses instead of being the guardians of the public interests, which Mr. HEWITT claims. We fear he is optimistic in his views in this respect, but his admirable and suggestive address is nevertheless well worthy the thoughtful consideration of every reader of the ENGINEERING AND MINING JOURNAL; of every man who seeks the prosperity of his country and the progress of mankind.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

Unprofitable Honduras Mines.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: As you have often proved your desire to thwart nefarious schemes in mining, I take the liberty of suggesting that you once more warn the English and American public against rash investments in Spanish Honduras. I am told that there is now something of a "boom" in Honduras mines, especially in London.

I have traveled over nearly a thousand miles of the country, and have kept my eyes and ears open, and I do not think there is one first-class mine known in Honduras to-day, even if there is one of the second class, which I doubt.

There are a few properties which are yielding a little bullion, perhaps paying expenses in a small way, and of course I do not deny the possibility of developing really valuable properties, for, as Overman says, "The precious metals are not (usually) found without diligent search," and I would by no means discourage that necessary searching; but I think, in a country which has yielded such poor returns on the investments of the past few years as has Honduras, more than the usual caution and economy should be practiced. Great things are told and recorded of the productiveness of Honduras mines in the time of the Spanish dominion, and many plausible reasons are offered to account for the discontinuance of operations; but, speaking of recent times, I do not know of a single instance of substantial success in the country. Perhaps you may be better informed.

The Rozario is thought by many to be an exception, and I believe it has yielded a couple of millions of dollars; but it only paid 25 cents per share during about a year and a half, and since that a large sum has been sunk in developments. The mill has been "going to start very soon" for over six months; some miners who have worked there say there is plenty of good ore in sight, and several say that is true, but the lower levels are barren. It is supposed that the adjoining ground, owned by a native, is good, and the Rozario Company may be scheming to acquire it cheaply. I know, however, that they offer to sell a large quantity of quicksilver, which does not indicate an early starting of the mill. A. H.

HONDURAS, C. A., September 18th, 1890.

[Our correspondent is well known to us as an experienced and reliable expert, and we commend his warning to the careful consideration of investors, while we think his pessimistic conclusions perhaps somewhat too sweeping.—ED. E. AND M. J.]

Comparison of Ontario and Comstock Mine Management.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: On the 23d of August the *Evening Chronicle* of Virginia City, Nev., indulged in some invidious comments on your publishing the output of the Ontario and Daly mines and omitting that of the Consolidated California & Virginia, claiming that as the output of the latter mine was more than equal to both of the former, you should have noticed it.

A knowledge of your fairness in such things induced me to investigate the affairs of the three mines mentioned, taking their published annual reports for authority, and I find from that investigation that you were warranted, and will continue to be warranted, in omitting from your columns any and all favorable notices of mines upon the Comstock managed in the manner there practiced.

Below I give you the figures from the reports of the three mines mentioned:

ONTARIO MINE.

Net receipts from ores, 1889	$1,662,166.86
Receipts from other sources	161,231.78
Cash on hand December 31st, 1888	603,872.40
	$2,427,271.04
Contra:	
Paid dividends	900,000.00
Cash on hand	457,179.15
Expenses	1,070,091.89
	$2,427,271.04

Their dividend of $900,000 is 54 per cent. of their net proceeds from ore.

They report on hand (exclusive of the value of the mine) property (including cash) $2,976,458.87. Included in this is 185,000 tons of tailings valued at $708,000. They saved 90 per cent. of the ore they milled.

They show a total output of $22,839,272.82, of which $10,625,000, or 46·52 per cent., has gone to the stockholders in dividends.

DALY MINE.

Net product from ores for 1889	$1,113,045.65
Receipts from other sources	51,458.57
Cash on hand December 31st, 1888	424,728.17
	$1,589,232.39
Contra:	
Paid dividends	$450,000.00
Cash on hand	618,220.15
Expenses	521,012 24
	$1,589,232.39

Their dividend of $450,000 is 40·43 per cent. of $1,113,045.65, but as they

increased their cash balance $193,491.99, they earned 16·38 per cent. more, or a total of 57·81 per cent.

They report assets on hand, including the cash but excluding the mine, of $1,134,932.58.

CONSOLIDATED CALIFORNIA & VIRGINIA, 1889.

Gross product of ore	$3,328,671.24
Receipts from other sources	201,819.62
	$3,530,490.86
Contra:	
Dividend paid	$972,000.00
Cash on hand	2,629.43
Discount on silver yield	569,328.44
	$1,543,957.87
Other expenses	1,986,532 99
	$3,530,490.86

Their dividend of $972,000, and discount on silver $569,328, is 43·65 per cent. of their yield.

They worked their ore, which is free milling, up to 81·32 per cent. of the *pulp assay.*

Their bullion discount on silver yield was 31·86 per cent. They make no mention of property on hand, and *do not report any tailings* on hand. A comparison of the annual reports of these three mines is full of interest.

In the Ontario and Daly there is evidence of a desire to give to shareholders the fullest details as to the respective mines. In the Consolidated California & Virginia it is the reverse, and apparently pains is taken to conceal all that has been done, the condition of the mine, and its future possibilities. There is no mention made of any tailings on hand belonging to the company. In view of the recent revelations made as to the tailings of other mines on the Comstock, the tailings from the hundreds of thousands of tons of ore from the Consolidated California & Virginia would be a fertile source of investigation to the stockholders of that company.

In the annual report of the Consolidated California & Virginia there is no record of any assay of ore at the mine. If the managers of the Hale & Norcross could manipulate ores going from $477 to $50 per ton so that they only paid the company $12.50 to $15 per ton, and cost assessments to produce them, I suppose that the shareholders in the Consolidated California & Virginia should be thankful that they are not served up in the same dish. It is true the law says distinctly that mine assays must be given for the benefit of the public; but, as one of our prominent mine managers said, "To h—l with the public: the milling is good enough for me!"

The Ontario mine, which produces all silver, has paid its stockholders 46·52 per cent. of its output in dividends.

The mines on the Comstock, whose ores are one-half gold, have not paid 25 per cent.

It is not necessary to go into any details as to the cause of this. Every one familiar with the handling of ores on the Comstock, knows that nowhere in the world does there exist such a complete system for robbing shareholders. It was originated by a Mephisto brain and the lesser devils have constantly added improvements.

"Speed thy way, good sir!
Thrice he is armed who hath his quarrel just."

And certainly you have a just quarrel with the managers of the Comstock and good and sufficient grounds to fail to notice them, except to oppose their scoundrelly practices.

Yours very truly,

MINING STOCK ASSOCIATION,
Per J. H. TINGMAN, Vice-President.

SAN FRANCISCO, September, 1890.

GREETING TO TUNNER AND LEOBEN.

One of the first names placed, nearly twenty years ago, upon the list of honorary members of the American Institute of Mining Engineers was that of Prof. Peter Ritter von Tunner, who founded, in 1840, what is now the world-famous mining school of Leoben, and who, more than any other—I might safely say more than all others—has made that school the central seat of the science of the metallurgy of iron. I do not undervalue the distinguished services of Percy in England, Akerman in Sweden, Jordan at Paris, and Kul at Clausthal. I do not forget such names as those of Bell, Karsten and the brilliant Scheerer, too early lost to us. On the contrary, it is upon the verdict of such eminent authorities that the fame of Tunner securely rests. And if we place to his credit, as surely we are justified in doing, the splendid work of the institution he founded, and of the pupils he has trained, we may fairly hail him as the Nestor of our profession.

The Iron and Steel Institute and the Verein deutscher Eisenhuettenleute have set their seals upon this verdict already, by electing Professor von Tunner to honorary membership. He was thus connected with the international assembly at Pittsburg by a triple bond of fellowship, and it was a fortunate coincidence that one of the Pittsburg sessions was held on the first day of the celebration at Leoben of the semi-centennial jubilee of that celebrated institution and of its honored head. The secretary of the Institute of Mining Engineers called attention to this circumstance at the session referred to, and observed also that Professor Hanns Hoefer, another honorary member of the institute, was to deliver on the following day the jubilee address at Leoben. He regretted the absence of Dr. T. Sterry Hunt, who, as a colleague of Tunner's more than a third of a century ago, would have been the most suitable spokesman for the Institute of Mining Engineers, and read the following letter from Dr. Hunt:

"DEAR DR. RAYMOND:

"The mention of the name of Peter von Tunner, of Leoben, awakens in me many pleasant and tender memories. More than 35 years since, at the great exhibition of Paris in 1855, I was the youngest of a group of jurors, appointed to examine and judge the objects therein belonging to the domains of geology, mining and metallurgy. It is sufficient to mention among my colleagues the names of Elie de Beaumont, Dufrenoy, de Chancourtois, Callon, de Vaux, Warington Smyth and Peter von Tunner. Of that group of jurors, so far as I am aware, von Tunner and myself are the only survivors. How he endeared himself to me and to us all by his assiduity, his earnestness, his simplicity and his profound knowledge of the principles and details of his profession I still remember with delight.

"Again in 1876, having as colleagues our honored fellow member, Sir Lowthian Bell, and the lamented Holley, whose monumental bronze we have so lately unveiled in New York, I was a judge at our Centennial Exhibition in Philadelphia. It was then my good fortune at one of the informal evening gatherings of our Institute of Mining Engineers to receive as our guest the Ritter von Tunner and to bid him welcome to the Institute which he had already honored by his membership. I well remember his pleasant surprise and his emotion at this greeting, after 21 years, from his former colleague.

"And now in the fullness of time are gathered the representation of three societies, one from Great Britain, one from Germany, and a third, their friendly rival, all devoted to that profession which von Tunner has done so much to render illustrious, and each claiming him as an honorary member, and, by a happy coincidence they meet in the great center of American iron industry, on the day when Leoben celebrates the jubilee of its world-famed metallsurgical school, and of its founder, Peter Von Tunner. What more fitting and proper than that we should send across the sea on this occasion our hearty greetings? I therefore venture to propose a telegraphic message from our international session, conveying our congratulations to von Tunner and to Leoben." "Yours truly,

"T. STERRY HUNT."

After graceful and cordial remarks from Sir Lowthian Bell and Mr. Alexander Thielen, representing the English and German societies, it was unanimously voted to cable to Prof. Hoefer, the orator of the day at Leoben, the greetings of the international session. R. W. R.

TAMARACK MINING COMPANY'S ANNUAL REPORT.

Following will be found extracts from the annual reports of the officers of the Tamarack Mining Company for the year ending June 30th, 1890.

DIRECTORS' REPORT.

The production of mineral was 12,031.574 pounds, which, at 74·20 per cent., gave 8,928,249 pounds of refined copper, from which has been realized the gross sum of $1,070,697.77; interest receipts, $2,413.13; total, $1,073, 10.90.

The costs have been: Running expenses at mine, $471,688.52; smelting, transportation, and all other expenses of handling copper, $176,576.18; total, $648,264.70; showing a mining profit of $424,846.20; add balance of assets June 30th, 1889, $1,465,763.93; total, $1,890,610.13; deduct dividends Nos. 6, 7, 8 and 8, $480,000; deduct amount expended in mine plant during the year, $362,863.66; total, $842,863.66; making the balance of assets June 30th, 1880, $1,047,746.47.

Dividends paid exceeded the mining profits by about $55,000. The directors decided to maintain the uniformity of dividends notwithstanding the fact that the fire of No. 1 shaft house in April and the strike in June seriously interfered with the company's operations during the last three months of its fiscal year. The product during July, 1890, was about 1,000,000 pounds of refined copper. The company is now providing itself with additional compressor power and adding to its stamping facilities, and the product will gradually increase, from and after December next, to about 1,500,000 pounds of refined copper monthly.

Underground Expense.—Shaft sinking, 83 feet at $16; winze sinking, 730.90 feet at $11.34; drifts, 3,644·80 feet at $9.18; stoping, 8,005·69 fathoms at $10.87, $130,126.55; tramming, timbering, labor, material, supplies and extra work, $117,475.62; supplies, labor, fuel, etc., for air drills, $39,589.59; supplies, fuel and labor for engines, $47,488.83; mining superintendence and company account, labor and blacksmith, machinist and carpenter labor, $35,617.16; total, $317,297.75; less profit on supplies, $339,-897.25.

Other Expenses.—Rock house, surface labor, supplies, office labor and supplies, transportation, stamping, incidental expenses, taxes, less rent collected, $131,791.27.

Construction Cost.—No. 2 engine and shaft equipment, No. 2 rock house, No. 2 shaft, expenditures on Section 11, etc., etc., etc., $362,863.66; total expended at the mine, $834,552.18.

SUMMARY.

Rock stamped	155,250 tons.
Product of mineral	12,031.574 lbs.
Product of refined copper	8,928,249 lbs.
Yield of refined copper per cubic fathom of ground broken	974 lbs.
Yield of refined copper per ton of stamped rock	57·51 lbs.
Yield of mineral per cubic fathom of ground broken	1,312 lbs.
Percentage of mineral in stamp rock	3·87 %.
Percentage of refined copper in stamp rock	2·87 %.
Refined copper, cost per pound at mine	5·28 cts.
Cost of smelting, freight, commission and Boston expense	1·98 cts.
Total cost per pound of refined copper laid down in New York and sold	7·26 cts.

We make the following abstract of Supt. John Daniell's report:

The events of the year with us were the fire of April 20th, which destroyed our hoisting plant at No. 1 shaft, followed a week later by a second conflagration at No. 3 shaft. In the first, and more important financially, no one was injured. Replacing the plant at No. 1, putting in new and better engines, was accomplished in less than seven weeks; but this, followed by a most unreasonable strike of underground laborers, practically cut out two months' production, enhancing very sensibly the cost of our copper for the year.

As we had access to the mine through No. 2 shaft and could use the auxiliary engine at No. 1 after the fire, we did not curtail the opening work, and kept most of our timbering force employed. This work, done in the interval of production, although increasing the cost for the time, will repay us in the future.

The cost of stamp rock, broken, and all other expenses included, for the year, was $3.03 per ton; for the first nine months $2.87 per ton. It should be noted that the cost of handling all rock broken, including openings in country rock, as well as what was discarded from the rock house, was $2.51 per ton. Rock hoisted from the conglomerate equaled 9,169 fathoms, cubic, and this afforded 974 pounds of ingot per fathom. Stamp rock yielded about 58 pounds ingot per ton. This is rather under last year's average, and due to the handling of lean rock, which it was necessary to break to get at the better.

No. 1 shaft sunk for the year 94 feet to 13th level. It is now 14 feet

deeper. The station or plat at 13th level is being cut, and the cross-cut pushed to the Conglomerate. In six weeks we should be hoisting from this point. Corrected depth of No. 1 shaft, from surface to 13th level, is 2,884 feet.

Between the cross-cuts we found a less length of poor lode than in the level above, but although we got profitable stoping ground we could not rate it as of nearly average quality.

Opposite No. 2 shaft a marked improvement was noted, and this continues. The opening of late has been very good for copper, with every prospect of continuance. The more advanced stopes are fully 16 feet wide. This level has been extended south 432 feet. Up to the crossing the lode was lean; beyond it we have been regularly stoping, and the width of the Conglomerate at points is in excess of 18 feet. Stopes here are equal to the average of the mine. When we have more stamping power ready we count on moving a good part of the block of ground outside or north of the crossing.

The 12th level north of No. 1 cross-cut has been extended 153·6 feet, and is opened for a length of 245 feet. The drillage commenced in low quality stoping ground, improving until the last 10 feet drifted to a rich lode 12 feet wide. At this time the opening shows but little copper, but as bars or patches of this kind occur occasionally, and the copper-course may be shifted nearer the hanging wall, we do not wish to attach much importance to the occurrence.

The 12th level south drifted 349·4 feet. At this time the opening is 200 feet south of the crossing, and from that point has been in fairly good stoping ground. The advanced stope is 18 feet wide and the hanging wall of the lode is not exposed. There is a greater width here than we have noted elsewhere in the mine.

Winze under 12th level to 13th, in line of No. 1 shaft, showed more copper in sinking than we have been finding in this line of ground above. Not by any means rich, but indicating an improvement. From bottom of the winze, 13th level, there has been drifted 70 feet in ground which we expect to stope for copper.

No. 2 shaft sunk 495·7 feet. Depth of shaft at 13th level, 2,868 feet. It is now 55 feet below, or 2,923 feet from surface. Plat has been cut and 13th cross-cut is well in towards the Conglomerate. In about three months we should be hoisting copper-rock from 13th level. This shaft will then be contributing its half of the mine's product of copper.

The 12th level, No. 2 shaft, is opened on the lode 86 feet. Stoping enough has been done to show it is from 16 to 18 feet wide. The conglomerate here is good, above our average, and richer drifts than the two here are rarely seen.

We cut the Osceola Amygdaloid in a cross-cut east of No. 1 shaft, 12th level. Are working in it at this time, cutting 13th level plat. Most of the copper we found is in the shape of small barrel. work, and this not far below the hanging wall of the bed. The lode is of full width, looks quite promising, and will require examination from us.

On Section 11 we have scarcely accomplished as much as was expected. We did not push the work in the early part of the year, because nothing unusual could have been anticipated, and later our experience was of a most retarding character. No. 3 shaft sunk for the year 388 feet, and is now 600 feet deep. The destruction of the shaft house caused the loss of a month's work. Then in a thick bed of very hard trap rock, we had a flow of water exceeding in quantity anything I have seen in the Lake region. Fortunately, we are now below the influx of water, which we pump from a reservoir, and the shaft bottom is dry. As there has been delay in delivering the permanent machinery for sinking this shaft, we will easily reach 700 feet before it can be got to work. I would not care to sink deeper with our present outfit. No. 4 shaft sunk 386 feet, and is now 500 feet deep. An excess of water has also been encountered here. The permanent plant for this shaft is now being erected, and, as we seem to be below the water, can soon be sinking from 1,000 to 1,200 feet per year.

Rock handled for the year, 182,434 tons; from the conglomerate workings, 165,045 tons, and of this we stamped 155,250 tons. There were stowed underground from the openings in country rock 17,389 tons.

Mineral produced, 12,031,574 pounds. Of this, 248,599 pounds were boulders.

The mill did its work very satisfactorily. Two heads were steadily in operation, the third running when necessary; 242 tons per day per head was the duty performed without in any way crowding; 6,718 tons of Kearsarge rock were stamped in addition to our output, the cost for the whole being 39 cents per ton.

At No. 1 shaft, after the fire, we put up a brick engine house, covering it with an iron roof. The hoisting plant is new, except the drum and drum-shaft. No. 2 plant, hoisting engines and rock house give good satisfaction. We got started in May last, but are only now getting a moderate quantity of rock. For completeness and efficiency, without being elaborate, we probably have here the best hoisting plant in the region.

The new air compressor is now ready to go into commission. Compound condensing steam engines with air cylinders 32 × 72 inches. This will enable us to double the number of drills we have at work underground. In connection with this we have a nest of four boilers. Both buildings are of brick, iron-roofed.

At the stamp mill we have erected No. 4 stamp, with machinery for washing complete. Have foundation in place for No. 5 stamp, and parts of this are on the ground. We are now erecting a new pump, which in ten days will be ready. Shall then be able to start No. 4 stamp, and will have water supply for six heads in the dryest season. Have built a new boiler-house at the mill, stone building with iron roof. This will inclose the four boilers we have at work, as well as a new lot of three which are now in place.

At section 11 we are putting up stone and brick buildings, for the hoisting plants required there. In about two months both of these should be in operation.

Have built a dam about one and a half miles west of the mine, which will confine 40,000,000 gallons of water. Have buildings for machinery complete and pipe partly laid between the dam and mine. This was necessary to insure ample water for feeding boilers and condensing. Until a few months ago No. 2 shaft afforded plenty of water, but this supply fell off when we were getting ready to do more work.

HOW TO SECURE HARMONY BETWEEN CAPITAL AND LABOR.*

It cannot be denied that, throughout the world, the relations between capital and labor are far from satisfactory. They are undoubtedly undergoing a process of readjustment not unlike that which followed the abolition of serfdom at the close of the Middle Ages. During the process of evolution leading to a new era there must necessarily be unrest, agitation, sometimes violence and generally severe loss on both sides, to the great detriment of society at large. The solution, when it comes, must be based upon justice; and it cannot come until public opinion is definitely made up as to the rights and duties of the contending parties, or until the contention shall cease to exist by the voluntary action of the combatants. Meanwhile, the severity of the struggle may be greatly mitigated and the final outcome accelerated if certain fundamental principles which have been established by the experience of mankind are kept steadily in view, and rigorously applied as each new complication shall arise. While the propositions which I shall state may be disputed by extremists, I think they will be generally regarded as axioms ingrained in the very constitution of human nature, and therefore to be accepted as standards of right and wrong to which all contentions may be referred.

I. Individual liberty consists in the right of each person to control his own life and to use the products of his labor in his own way, so long as he does not interfere with the equal rights of any other person.

II. Individual liberty implies the right of two or more persons to combine together and to use their property and faculties as they may see fit, so long as they do not interfere with the equal right of other individuals or combinations of individuals.

III. As population grows, there will necessarily be interferences among individuals and combinations of individuals, which must be adjusted; and hence the necessity for government and for tribunals whose judgment must be final.

IV. In countries where law expresses the will of the majority, and in which it can be amended as often as the majority may desire, there is no justification for resort to private or personal force in order to rectify wrongs, correct abuses, and maintain the rights of men. If the courts of justice have not adequate jurisdiction, it is the duty of the legislature which represents the public will to supply it, and all agitation should be directed to secure such legislation; and no man or set of men should be allowed to take the law into their own hands, to usurp the functions of the courts of justice, or to forestall the action of the legislature.

Bearing these axioms in mind, the following conclusions may be submitted as incontrovertible:

1. It is the equal right of employers and employés to make combinations among themselves respectively, or with each other to advance or reduce wages, or establish or resist legislation which either or both may regard as essential, desirable, or objectionable.

2. Neither party has the right to coerce the other into submission, except through the action of the courts or tribunals duly constituted to hear and decide upon causes of action submitted to them by either or both parties.

3. The right of workmen to refrain from labor and the right of the employer to cease to employ are correlative rights; but no one has the right to compel any other workman to cease from labor, nor has the employer any right to lock out his workmen in order to compel submission to obnoxious rules.

4. Strikes and lock outs are therefore equally indefensible on the ground of justice, and can only be tolerated in the absence of provisions for the submission of grievances to the adjudication of competent tribunals.

5. No man has the right to compel another man to combine with him in any organization, and when a man declines to combine it is a violation of right to refuse to work with him, and to deny him the means of earning a living. It is equally wrong for employers to black-list men, so that others will not give them employment.

6. A boycott cannot be defended under any circumstances whatever. It is in effect a declaration of private war, which is a crime to be stamped out by prompt and severe punishment.

7. The claim of any body of men that under any circumstances they have the right to stop the operations of business by the issue of an order in the name of organized labor or associated capital cannot be tolerated. When such an order is given in regard to any railway or any other means of communication, it is a direct assault upon the common weal; and the failure to arrest and punish the offenders thus usurping the executive functions of the State and the judicial power of the courts is proof of cowardice on the part of the public officials and of degeneracy in the public opinion, which excuses or permits the violation of the principle of the common law, that "not even the king can obstruct the highway." . . .

The iron business, as now organized, is a field in which capital and labor are brought into direct and immediate contact. It requires the capital of at least $1,000 for each man employed. It has grown up under the wages system, in which one party hires the other at an agreed price, and all the risks and profits of the business are assumed by the owners. Under the modern system of industry, its operations are conducted on a scale of such magnitude as to require the association of capital in corporate organizations which have almost entirely superseded private firms and ordinary partnerships.

As a rule the workmen have formed unions for the care of their interests, and especially to secure a satisfactory rate of wages. The formation of such unions is alike a right and a duty; and so long as they confine themselves to the assertion of the rights and the care of the interests of their members they are to be commended and encouraged. The employers, on the other hand, have also various associations for the protection of their own commercial interests, but no general organization, so far as I am informed, for the regulation of wages. Both sides are now prepared for argument; and in this fact is to be found the starting-point from which may be readily reached the ground of conciliation and arbitration which ought to make strikes and lock outs a memory of the past, to be recalled as a warning and not as a menance. In England, which has taught us how to make iron and steel cheaply and well, the system of

*Extract from Presidential address of Hon. Abram S. Hewitt before the Am. Institute of Mining Engineers, October, 1890.

voluntary arbitration has been in operation since 1869 and has worked, in the main, in a manner satisfactory to both parties, and with decided advantage to the public. Official arbitration, under the law which was passed in 1872, has not been found to be acceptable to either workmen or employers, and no case has ever arisen under the provisions of the law from which enthusiasts expected the most beneficent results. On the other hand, too much is not expected or attempted in the voluntary arbitrations which have sufficed to settle most of the disputes of the last twenty years.

It is admitted that the question of wages is fundamental, and that it can only be solved by the equal representation of both sides, with an umpire, whose decision shall be final after the fullest submission and discussion of complete information as to costs, sales, and the condition of the trade. Attempts of either side to get the better of the other by tricks and misrepresentation have long since ceased, so that when a result is arrived at, the award of the arbitrator is accepted by both sides as a satisfactory solution. Here it is obvious that three fundamental elements of conciliation have been evolved from the contentions which formerly resulted in strikes and lock outs. The right of combination on both sides is admitted; the mutual equality of both parties is conceded, and the right of both to be informed as to the actual condition of the business is acknowledged.

In view of such an example, and of the advantage of avoiding conflicts damaging alike to employers and employed, I am satisfied that we shall not be long in adopting a similar system of settling disputes by voluntary action, and that there will not be any disturbances serious enough to interfere with the rapid increase of product, which, as we have seen, is required by the progress of our country.

It is manifest that this method of settlement involves publicity as to the profits of business. There is undoubtedly great reluctance and some ground of objection to the disclosure of cost and profits; but, as a matter of fact, the transfer of business to large corporations has really made this information public property, and in the iron business there is no longer any pretence of concealment either from stockholders or competitors. Surely then there remains no valid reason for denying to the workmen the information necessary to enable them to formulate reasonable demands; and it is to the interest of the owners to give this information, inasmuch as the margin of profit on manufacturing operations is now narrowed down to the smallest limits consistent with a moderate return on the capital employed. There is so much misapprehension on this point in the public mind that I am impelled to say that in the great staples of trade it is exceedingly difficult to get an adequate return for the capital employed, and the business is often conducted for long-continued periods on a basis which insures only wages for labor, without any return whatever for capital. Where large profits are realized, they are due either to the production of specialties covered by patents, or to the possession of raw material under exceedingly favorable conditions of cost or locality.

There is no feature in the business more pronounced than the excessive competition which cuts down profits to a minimum, and hence attempts have been made to control product and prices, through combinations looking to the maintenance of standard prices, and, in some cases, by the reduction of the output. In the public mind such arrangements are confounded with trusts, which have been the subject of so much recent criticism and denunciation. The objection to trusts is not to be found in the magnitude of their operations. This, in the modern development of industry, is unavoidable, and constitutes, in fact, an advantage to society by insuring lower prices and better quality, and to the workmen by providing the best appliances for labor and arrangements for the preservation of health and the increase of comfort. It is only when trusts attempt to create a monopoly and succeed in destroying competition that they become injurious to the public welfare. It is extremely doubtful whether it is possible to maintain in this country an effective monopoly of any staple product of industry, but whether possible or not in other branches, the iron business is too widely diffused and is too vast in extent to admit any monopoly not sanctioned by law. The concentration of business, however, in special localities and the consolidation of interests in order to secure enactment of administration is a public benefit. The greater the organization and the larger the capital employed, the more certain it becomes that the business will be steadily prosecuted, thus avoiding the greatest evil under which workmen suffer—lack of constant employment. The principle of association developed in great industrial corporations is therefore altogether beneficial, and should have the hearty sympathy of the public, and especially of the labor organizations.

In any previous period of history such vast establishments might have been converted into devices for oppressing the workman and for preying upon society by excessive prices; but in the presence of powerful labor organizations, whose right to demand information and whose power to obtain justice is now conceded, no oppression is possible, and no exaction can be continued under the scrutiny of an omnipresent and omniscient journalism. Society has therefore nothing to fear from the growing tendency of workmen to form unions and of capital to centralization in great industrial corporations. But society has a duty to perform in the enactment of legislation which will regulate these organizations by a clear definition of their respective rights and duties.

Publicity, inspection and discussion are the great safeguards which the public can apply in order to correct abuses and avoid conflicts and disastrous losses. The discouraging feature of the time is that the legislative department has shown not merely indifference but abject cowardice in dealing with the questions which from time to time require the interpretation of the law. Some of the legislation which has been recently enacted is a positive violation of the fundamental axioms which I have ventured to lay down and of the provisions of the Constitution in reference to the liberties of the citizens, which are quoted in the outset of this address; but the greatest evil is the failure to legislate at all with reference to interferences which result in constant conflict, to the great injury of the public. What we need, therefore, is a recurrence to the well-settled principles of jurisprudence, a higher order of statesmanship, and the courage on the part of our public men to stand up for the right, though for the time it may involve the sacrifice of personal popularity.

The course of procedure is clear. All organizations which avail themselves of the provisions of the law for the creation of corporations should be required to report the result of their business and be open to the inspection and scrutiny of public officers appointed for the purpose. This principle is already recognized and enforced with reference to savings and other banks, insurance and trust companies, and railway corporations. It has not yet been applied to industrial organizations; but these now exist on so large a scale and employ so many men, disputes with whom affect the public convenience and interests so seriously, that every safeguard should be applied to prevent the disturbance and dislocation of industry. Publicity as to profits and losses would at once remove the most serious cause of strikes, which often take place when it is impossible for the employer to concede the demands of his men, because his profits will not warrant the concession. With proper information, the intelligence of the workmen may be relied upon not to make an issue which can only result in failure.

It will not be necessary to give any compulsory power of rectification to the officers charged with the duty of inspection. No real abuses can survive the criticism of the press when they have been fully investigated by an impartial tribunal. No strike can then succeed, unless it is based upon an abuse recognized and reported as a positive grievance by competent authority. All trade regulations and the rate of wages can then be safely left to voluntary agreement between the representatives of masters and men, sitting as equals on a board of conciliation, and presided over by an arbitrator who has the confidence of both.

Violations of the fundamental principles of society should be made crimes to be promptly punished. The legislature will readily respond to sound public sentiment in this respect; and a stern enforcement of the law is the best security for peace and order.

With industry under the control of great corporations endowed with adequate capital, with the workmen thoroughly organized to protect their rights and advance their interests, with proper public inspection and publicity as to the condition and results of the business, with legislation covering the grounds of conflict, and with the co-operation of the judicial arm clearly expounding and steadily enforcing the law, it does not seem difficult to forecast the outcome of the evolution which is going on in the industrial world, and which seems to be full of promise and encouragement under the beneficent law which Edward Atkinson discovered, and which he and Robert Giffin have demonstrated, to wit: That labor is receiving a steadily increasing share of a steadily increasing product; and that capital is receiving a steadily diminishing share of an increasing product, still insuring for it an adequate remuneration.

More than fifty years ago, John Stuart Mill laid down the proposition that when employers and employés had a common interest in the work, in the nature of a partnership, the means would exist of "healing the widening and embittering feud between the class of employés and the class of capitalists." Since these words were written the feud has widened and the conflicts have become more frequent and more intense. On the other hand, the work of educating both employers and workmen has been going on in a bitter school of experience. Various attempts have been made to get the two classes together on some basis of organization which will make the remuneration of each directly and visibly dependent upon the profits of business. Under the existing system, wages are necessarily paid out of profits in the last analysis, but the rate and amount are not determined by the actual results from day to day. On the other hand, they constitute a prior lien upon the business, as well from necessity as now by law, and are thus exempt and guaranteed against the losses of the business.

The workman, however, fails to perceive that he is thus dependent upon the profits in order to get wages, and that he has the preference over all other claims upon the product of the business. Hence the sense of personal interest is lacking, and the success of the enterprise forms no part of the workman's current of thought. He has, in fact, no means of knowing the condition of the business, and his individuality is lost in the vast aggregation of energy which is combined in order to produce the results of modern industry. In England, it is notorious that the action of the trade unions has been exerted in the direction of obliterating the individual to such an extent that special skill is rapidly declining, and in the finer grades of work it is almost impossible to find the experience required for the production of instruments of precision. This is a national evil of the first magnitude; and its disastrous consequences are becoming more apparent to the intelligent workman, whose opportunities to rise in life are thus abridged and destroyed.

Slowly but surely, therefore, a new idea has been taking root in the industrial mind. Profit sharing is getting to be a familiar thought both with employers and workmen, and many promising experiments in this direction are now in progress in this and other countries. The practice is to pay the current rate of wages in the usual manner, then to allow a reasonable percentage on the capital employed, and, if there be any excess after these payments, to divide it equally or otherwise between the capital and the labor, estimated by the amount of wages paid. The success of this system depends obviously upon the ability of the business to earn the current rate of wages. As this is not possible at all times, the employer must have sufficient capital to carry on business at a loss for a season, with the expectation of recouping the loss out of the future profits. It is idle to expect that workmen will be able or willing to refund losses, the risk of which must remain therefore, as it now does, with the employer. Hence the necessity and usefulness of the great organizations under the control of which the iron business is passing, by steady and irresistible progress. In such establishments the work of production will go on in bad as well as in good times, and the workman will be secured against the evils of intermittent employment.

But even this advantage is not sufficient for intelligent and ambitious men. Each man should be paid wages according to the value of his labor, and not on the mistaken basis of a dead level of mediocrity advocated and enforced by some trades organizations. Progress is only possible where the individual is encouraged to develop his skill and apply his labor, by a payment in proportion to the results achieved. But higher and beyond all this stands the stimulus of being engaged in a successful business and having a direct interest in its results. If the workman were a stockholder as well as a laborer working for wages, he would have such an interest; and this would tend to raise his self-respect as well as to develop his energies. But profit-sharing, at it is called, will never be

popular with the workman, because, on the face of it, it is an act of grace from the employer.

A self-respecting workman is not willing to accept charity. What he wants is justice; and any concession from the employer which does not recognize the right of the workman will be, and ought to be, rejected by independent and self-respecting men. When a workman, however, becomes a shareholder, either by payment for stock or by an agreement to pay for it out of his earnings, he stands on a level with the capitalist, and in fact, as well as in theory, is in a position to feel that he is working for himself in doing his best to promote the success of the business in which he is engaged. . . .

COPPER IN STEEL.

M. Henri Schneider, of the Creusot Works, France, according to the *Ironmonger*, has taken out patents for the process of manufacturing alloys of iron and copper. "M. Schneider's plan is first to produce an alloy of cast iron and copper, and subsequently to use the alloy so manufactured to introduce a given amount of copper into crucibles of open-hearth steel. We quote from his patents as follows: "In carrying out the present invention the furnace is charged with copper scrap and cast iron mixed between layers of coke, or if a cupreous coke be employed then the cast iron is laid in alternate layers with it, and a layer of anthracite is preferably laid over the whole. The alloy, which is the product of the furnace, contains, generally, from 5 to 20 per cent. of copper, according to the purpose for which it is employed, and it is remarkable for its great elasticity, strength, tenacity, and malleability—properties which may be still further developed by chilling or tempering. This alloy is charged into the bed of a furnace with the ordinary ingredients used in the manufacture of steel, preferably under a layer of anthracite to avoid oxidation. It is important that the copper be introduced at as early a stage in the process as possible. The alloy of cast iron and copper may be introduced either while yet melted or after cooling and hardening; or it may be prepared in the furnace itself, where the operation of manufacturing the steel is carried on. In the latter case the bed of anthracite is first prepared, and the copper placed thereon with a suitable quantity of cast or pig iron. The whole is then covered with anthracite in order to protect the metal from contact with the air during the fusion. When the charge is melted the excess of anthracite is removed and successive charges of iron or scrap added, the operation being then continued in the ordinary way, care being taken to continually protect the bath from oxidation by means of a layer of slag or cinder, which may be renewed as required, and also to prevent redshortness in the metal before the final introduction of the recarbonizing and manganiferous silico-spiegel iron or ferro-manganese. The steel produced according to this invention generally contains from about two to four per cent. of copper, this being a sufficient quantity to impart to the metal the qualities of elasticity, strength and malleability to a remarkable extent; but the invention is not limited to these proportions. The steels alloyed with copper are especially useful in the manufacture of ordnance, armor plates, gun barrels, projectiles, and for other military purposes, or in the manufacture of commercial sheets, bars and the like. They may be obtained with varying amounts of carbon, manganese, or silica, or silicium, according to the degree of hardness required and the purpose for which they are employed."

The copper-steel shown by Holtzer at the Paris Exhibition had extraordinarily high elastic limit, rising to 142,228 pounds per square inch in the hardened and tempered pieces, and being even then combined with 6·2 per cent. of elongation measured in 7·9 inches. It was stated there by M. Brustlein, the manager of Holtzer's works, that the presence of more than one per cent. of copper gave decided redshortness; that copper seemed to favor the formation of blowholes, and that it did not appear to be uniformly distributed through the metal.

The statements in M. Schneider's patents are most surprising. He appears to make a cast iron containing from 5 to 20 per cent. of copper, and possessing great elasticity, strength and malleability. But trustworthy observers have reported that carburetted iron, cast iron will not combine with any large quantity of copper. Even when only five per cent. of copper was added to cast iron, copper-colored specks separated out in cooling; with nine per cent. of copper deep-red leaves separated out, and with 16·7 per cent. of copper a separate copper button formed beneath the cast iron.

M. Schneider's statements deservedly carry the greatest weight. They seem to imply that he has discovered conditions which others had overlooked and under which cast iron can be induced to combine with much copper and at the same time to become thereby at once extremely strong and tough; but, till further facts are before us, we fear that some scoffers will suspect that M. Schneider's patent specification is a blind. If he deliberately states that his copper steel may contain varying quantities of silica as well as silicon, and he seems to, these captious ones may have some shadow of excuse.

Prize for Water-Works Project.—About sixteen years ago the King of Belgium instituted an annual prize of 25,000 francs with a view of encouraging intellectual works upon various subjects. The prize which is to be the object of the international competition for 1893 will be awarded for the best work on the means of procuring for large cities, and particularly the city of Brussels, an abundant supply of the purest drinkable water, provision being made for the anticipated increase of population. Both manuscripts and printed works will be admitted for competition. The new edition of an existing work will only be receivable if it includes considerable modifications and developments published in the years 1889, 1890, 1891 or 1892. The works may be written in French, Flemish, English, German, Italian or Spanish. Foreigners desiring to compete will have to forward their works before the 1st of January, 1893, to the Minister of Agriculture, Industry and Public Works, in Brussels. Any manuscript work for which the prize may be awarded must be published during the course of the following year. The decision upon the competition will be given by a jury appointed by His Majesty the King of the Belgians and composed of seven members—three Belgians and four foreigners of different nationalities.

THE STELLA SAFETY LAMP.

This lamp, which, according to English papers, is about to be introduced by several British companies, and will shortly be tested by the mining company of Anzin, France, in one of its most dangerous galleries at the bottom of the mine, has been thoroughly investigated by English experts and the Paris Mining School. The lamp weighs about three and a half pounds, and gives a light which is equivalent to about one candle and entirely constant, a feature which contrasts favorably with the Marsaut lamp, whose light is gradually dimmed by cold-dust and smoke. The current, which is obtained from an accumulator, is constant for about twelve hours, but can be maintained four hours longer. The accumulator consists of two ebonite cells, each containing five plates 3 by 1¼ inches, and is provided with a rubber arrangement to protect it from shock. Two of these plates are of solid peroxide of lead known as lithanode, weigh about half a pound and have a capacity for useful work of seven ampère-hours. The three other plates are of spongy lead, held in position by a light support of high conductivity. The oftener the lithanode is recharged the better it becomes. In the outside box, made of steel, which is galvanized in order to prevent oxidation, is a single button, by the manipulation of which the miner can light or extinguish the lamp. By opening the lamp the light is put out, and in case the lamp should break, a small reservoir pours out acidified water, so that the lamp seems to afford complete safety, a claim which is corroborated by the experiments of Dr. Frankland, who found that the lamp when plunged into lighting gas much more explosive than fire-damp, caused no explosion. The steam required to charge 500 Stella lamps is only two horse-power. The lamp sends out light only at one side, and is not protected by a wire net over the glass, as this would absorb too much light; photometric experiments bearing on this point will soon be started by several scientific bodies. The *Berg-u-Huettenm. Ztg.*, to which the JOURNAL is indebted for this note, ends its description of the Stella lamp with a general recommendation of it.

PYROMETRIC DATA.

Written for the Engineering and Mining Journal by H. M. Howe.

Thanks to the labors of M. le Chatelier, we have at last a pyrometer capable of measuring easily, accurately and rapidly extremely high temperatures, indeed, those approaching the melting point of platinum. And this is not an apparatus which each must construct for himself; it is for sale ready made. Indeed, it is so far simplified that it has actually entered into practical use for the control of high temperatures in steel works, glass works and gas works.

It is not, indeed, a readily portable apparatus, and hence certain difficulties of detail attend its use in manufacturing establishments. These may be overcome, however, by setting the pyrometer up in the laboratory or other central point and connecting it by wire with the furnace or other hot place whose temperature is to be determined, at the same time connecting the observer at the furnace with the one in the laboratory by telephone. Other difficulties are mentioned below.

Where very accurate control of temperature is needed, as in the heat-treatment of war-material and in making fine porcelain ware, this instrument will probably be indispensable, at least till replaced by a still more convenient one. But I will hardly go so far as to predict for it an extended use in other industrial establishments, where a rough measure of the temperature, such as is afforded by Mesuré and Nouel's telescope or by Seger's normal-pyramids, or by the common calorimeter based on the method of mixtures, suffices.

However this may be, it is certain that its great convenience will attract physicists to the study of phenomena at high temperatures, as to which our knowledge is as yet so woefully scanty.

Le Chatelier's pyrometer, like the other thermo-electric pyrometers, is based on the fact that when the contact of two unlike metals is heated, an electromotive force is set up, which, if the metals themselves form part of a circuit, sets up a current. The intensity of the current is related to that of the electromotive force thus:

$$I = \frac{E}{R}$$

R being the resistance of the circuit. If the resistance is constant, the intensity of the current will depend solely on the electromotive force, and this in turn rises with the temperature. By means of a galvanometer, then, the currrent may be measured, and the temperature deduced. If the metals composing the couple are homogeneous, then the electromotive force is independent of the length of the contact. In point of fact, the contact may be short, and the metallic wires which form it may be very thin. In Fig. 2 they are shown of natural size. It is, of course, also important that the metals which compose the couple should neither melt, become oxidized, nor react chemically on each other at very high temperatures. Finally, the relation between the temperature and the thermo-electric force developed by the couple should be capable of being expressed simply. Actually, the couple is composed of two wires, one of pure platinum, the other of platinum alloyed with 10 per cent. of rhodium, both of which are unalterable even at a very high temperature, and, with proper precautions, very homogeneous.

These wires are so thin that they reach the temperature of the surrounding objects almost instantaneously; hence, and, as the aperiodic galvanometer used, that of Deprez and D'Arsonval, reaches equilibrium extremely quickly, and the image which it throws becomes quite fixed, the temperature may be ascertained extremely rapidly, and very rapid changes of temperature can be accurately read. Five seconds exposure to the temperature to be measured suffices.

Fig. 1 shows the apparatus in elevation, Figs. 2 and 3 show some details of its arrangement in the late investigations carried out by M. Osmond.

Referring to Fig. 3, S is a small Forquignon furnace in which the tube T containing the substance whose temperature is to be determined, which in this case consisted of two pieces of steel bound together with iron wires, and with grooves filed in their faces, in which the wires of the couple lay. E is a vessel filled with water, and holding the cold ends of the two wires, each of which is here connected with a copper wire, leading to the galvanometer G. A lamp, L, throws its light upon the fix-

ed mirror *M*, and thence upon the swinging mirror *m* of the galvanometer, which in turn reflects the spot of light upon the scale *R*. As the temperature of the point of contact of the couple varies, changing the electromotive force, and through this the current which passes through the galvanometer, the mirror *m* of the latter swings, and the spot of light travels to right or left along the scale *R*, which is transparent.

Turning now to Fig. 1, *b b* are the copper conductors leading from the platinum-rhodio-platinum couple to the galvanometer, which is contained in the left-hand box *A*, the right-hand box *B* holding the lamp *c* and the transparent graduated scale *d*; *m* is the swinging mirror of the galvanometer, and the line of light leading from the lamp to this mirror and back to the scale is shown. *v v* are set-screws for setting the two boxes plumb.

A drawback to the use of the apparatus is that each instrument must be specially graduated, and it is well to repeat the graduation from time to time. Moreover, it is a little delicate, and hence a certain apprenticeship with it is needed before one can use it with confidence.

It is graduated by plunging the couple successively into boiling water, napthaline and sulphur, and into melting aluminum, gold and palladium. The boiling and melting-points of these substances are known, and, by plotting them as abscissæ, and the corresponding indications of the spot of light as ordinates, a curve is obtained to which all intermediate readings may be referred. Fortunately, this curve is extremely regular; indeed, it is almost a straight line.

Fig. 4 shows a sort of bayonet arrangement, by means of which the couple may be inserted into a steel-melting furnace, a Bessemer converter, or other hot place. The couple itself will give its indications almost instantaneously, before the bayonet has been injured by the heat. Of course, care must be taken to avoid spattering the couple with melted steel, as platinum alloys with iron at a relatively low temperature, which explains the surprising statements of certain distinguished chemists that

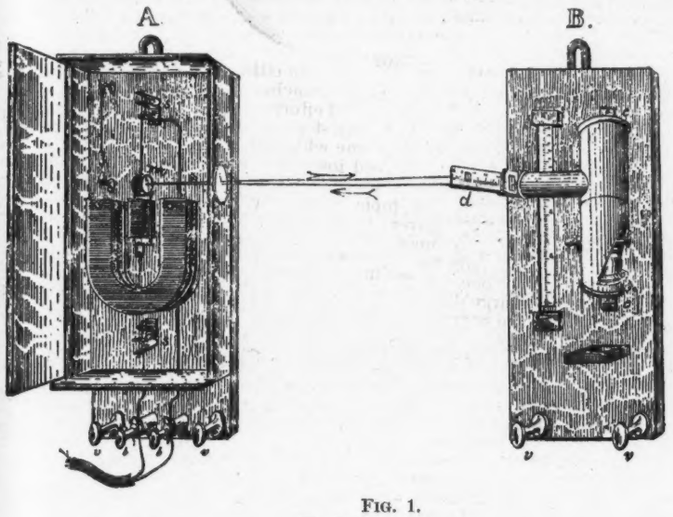


FIG. 1.

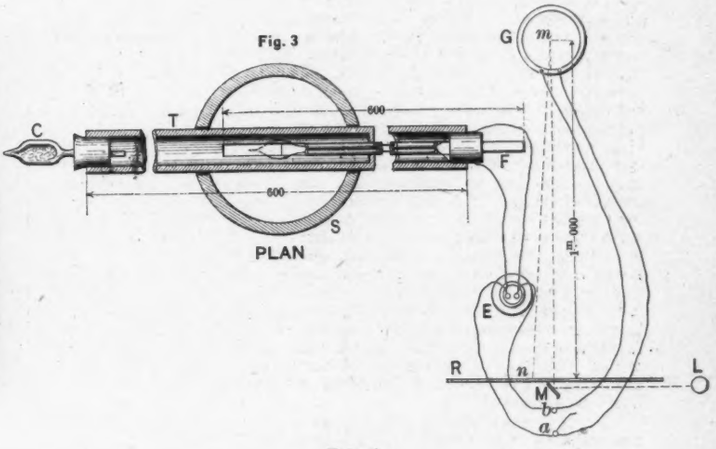
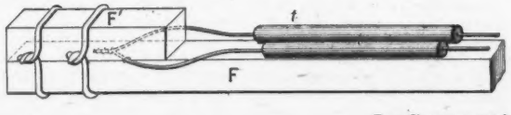
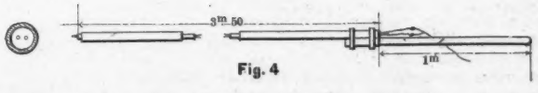


FIG. 3.

Fig. 2





LE CHATELIER'S THERMO-ELECTRIC PYROMETER.

the temperature of the Bessemer process is above the melting-point of platinum. This they inferred from holding platinum wire in the steel and finding that it melted. As well might they infer that sugar melts at 60 degrees Fahrenheit, because a stream of water at that temperature dissolves it.

This instrument is made and sold by M. J. Carpentier, successor to the famous Ruhmkorff, 20 Rue Delambre, Paris. I give the prices which he quotes, also those quoted by Queen:

	Carpentier, price in Paris.	Queen, price in Philadelphia.	
		Excluding U. S. duty.	Including U. S. duty.
Pyrometer	$80.00	$75.00	$108.75
Cane	5.00	6.75	9.80
Two meters of couple-wire, platinum and rhodio-platinum	12.00	13.33	20.00
50 meters of flexible cable carrying both wires from the couple to the galvanometer	10.00		18.15
Packing	7.00		
	$94.00		$156.70

For further information about this pyrometer, see

Le Chatelier, De la Mesure des Températures Elevées par les Couples Thermo-Eléctriques, Journal de Physique, 2d series, VI., January, 1887.

Génie Civil, March 5th, 1887.

Osmond, Transformations du Fer et du Carbone dans les Fers, etc., Paris, Baudoin, 1888.

Le Chatelier, Conférence sur la Pyrométrie, Compte Rendu du 16me Congrès de la Société Technique de l'Industrie de Gaz en France, June, 1888.

Damour, Bulletin de la Société des Anciens Elèves de l'Ecole des Mines, March–April, 1889.

Etude sur la Mesure des Températures Elevées.

La Lumière Electrique, XXXVI., May 17, 1890.

Le Chatelier, Sur la Mesure des Températures Elevées Developées dans les Foyers Industriels.

As many important additions have lately been made to our available pyrometric "benches," I give herewith a few data which may be of convenience to your readers.

	Melting points. C.	Boiling points. C.	Other points. C.
Water	....	100	.....
d Carbonic oxide begins to reduce precipitated ferric oxide at about	....	....	141
d Carbonic oxide begins to reduce Cleveland ore at about	....	....	199
d Carbonic oxide begins to deposit carbon between	....	....	220 and 221
d Deposited carbon begins to react on iron oxide at or below	....	....	249
d Carbonic acid begins to oxidize metallic iron between	....	....	299 and 417
Naphthaline	....	218	.....
Lead	325	....	.....
b Chloride of ammonium	....	340	.....
Mercury, Violle	....	358	.....
Zinc, Violle	415	....	.....
d Carbonic acid oxidizes soft but not hard coke	....	....	417
d Carbonic oxide begins to oxidize spongy iron at or below	....	....	417
c Nickel, critical range, Pionchon, between	....	....	220 and 440
d Carbon-deposition (Bell), most rapid between	....	....	400 and 450
b Sulphur, Violle	....	448	.....
a Hydrate of lime, CaH_2O_2, dissociation-point	....	....	450
b Aluminum	625	....	.....
a Magnesite, carbonate of magnesia, dissociation-point	....	....	650
Selenium, Violle	....	665	.....
c Hardening-point, lowest, of steel of 0·57 per cent. of carbon, Osmond, between	....	....	658 and 698
c Iron, lower critical point for (Brinnell's V, Chernoff's a (?)), between	....	....	660 and 720
a Bronze, 20% tin (80% copper?)	790	....	.....
Low cherry-redness	....	....	800
a Calcite, carbonate of lime, dissociation-point	....	....	850
a Brass (copper 62%, zinc 38%)	880	....	.....
c Cobalt, critical range, Pionchon, about	....	....	900
Silver, Violle	945	....	.....
a Aluminum-bronze, 10% aluminum	980	....	.....
b Potassium-sulphate, neutral, K_2SO_4	1,015	....	.....
Gold, Violle	1,045	....	.....
c Iron, upper critical point for, Pionchon (Brinnell's W, Chernoff's b (?) about	....	....	1,050
Copper, Violle	1,054	....	.....
Deep orange color, Pouillet	....	....	1,100
a Cast-iron, white, 4% carbon	1,135	....	.....
a " gray, 3·5% carbon, 1·7% silicon	1,220	....	.....
a Ferro-nickel, 25% nickel	1,230	....	.....
a Manganese-steel, 13% manganese	1,260	....	.....
Whiteness, Pouillet	....	....	1,300
a Steel, hard, 0·9% carbon	1,410	....	.....
a Steel, half-hard, 0·30% carbon	1,455	....	.....
a " soft, 0·1% carbon	1,475	....	.....
f " soft, 0·10% carbon, 5% aluminum	1,475	....	.....
Palladium, Violle	1,500	....	.....
Dazzling whiteness, Pouillet	....	....	1,500
Platinum, Violle	1,775	....	.....

TEMPERATURES OBSERVED IN GLASS WORKS. *a*

I.—POT-FURNACE.	Degrees.
Temperature of the furnace toward the end of the melt between the pots	1,375
Before the pots	1,275
Glass, at the end of the melt	1,310
II.—SIEMENS CONTINUOUS BOTTLE-GLASS FURNACE.	
Furnace	1,400
Glass	1,310
Annealing furnace	550
Gas escaping from gas-producer	585
Escaping products of combustion, mean	250

TEMPERATURES OBSERVED IN STEEL WORKS. *a*

III.—OPEN-HEARTH STEEL FURNACE.

Furnace when the cast-iron is just melted	1,420
Furnace at the moment of casting	1,500
Gas leaving the regenerators 5' after reversing	1,220
Air " " " 5' " "	1,070
Gas escaping from gas-producer	720
Gas in cooling tube	400

IV.—CRUCIBLE STEEL MELTING FURNACE.

Furnace, between the pots	1,600

V.—ROBERT BESSEMER CONVERTER.

Flame, 12' after beginning of operation, carbon beginning to burn	1,330
" 25' " " end of blow	1,580
Melting point of the resulting steel	1,450

VI.—SIEMENS BENCH OF GAS-RETORTS.

Furnace, top of the side on which the flame is rising, a little before reversing, hottest point in furnace	1,290
Furnace, lower part, toward the escape of the products of combustion	1,045
Interior of a full retort at the end of a charge	875
Interior of retorts which had been empty for an hour	870 to 945
Escape of the products of combustion, shortly before reversing	680

a Advance sheets of a paper by H. le Chatelier, Sur la Mesure des Températures Élevées Developées dans les Foyers Industriels.
b Étude sur la Mesure des Températures Élevées dans l'Industrie, et sur le Pyrometre Thermo-Electrique de M. le Chatelier, by Emilio Damour. Determinations quoted from le Chatelier.
c Comptes Rendus. CIII., 1886, p. 1,124.
d Sir Lowthian Bell.
e Transformations du Fer et du Carbone.
f Osmond, private communication.

As many metallurgists and steam engineers use calorimeters based on the method of mixtures, heating a ball or other piece of iron to the temperature to be determined, and observing how much the iron raises the temperature of a known weight of water, into which it is plunged; and as the specific heat of iron enters into their calculations and varies capriciously, I give here the heat capacity and apparent mean specific heat of pure iron, as determined by Pionchon:

Temperature, degrees C.	Calories evolved by iron in cooling from T to 0°C.	Apparent mean specific heat of iron between T and 0°C.	Calories evolved by pure nickel in cooling from T to 0°C
400	62·5	·156	51
500	68·5	·137	64·5
600	87·5	·146	78
700	111	·159	93
800	136	·170	108
900	157·5	·175	123·5
1,000	179	·179	140
1,100	194	·176	156
1,200	214	·178	173

For intermediate temperatures, the quantity of heat evolved by pure iron and by pure nickel may be found by the following formulæ:

For iron, from 0° to 660°, $q_0^t = 0{\cdot}11012\ t + 0{\cdot}00002533333\ t^2 + 0{\cdot}000{,}000{,}054{,}6666\ t^3$ (1)

" " 660° to 723°, $q_0^t = 0{\cdot}57803\ t - 0\ 00143598\ t^2 + 0{\cdot}000{,}001{,}195\ t^3$ (2)

" " 723° to 1,000° $q_0^t = 0{\cdot}218\ t - 39$ (3)

" " 1,000° to 1,150° $q_0^t = 0{\cdot}19887\ t - 23{\cdot}44$ (4)

For nickel, from 0° to 230° $q_0^t = 0{\cdot}10836\ t + 0{\cdot}00002233\ t^2$ (5)

" " 230° to 400° $q_0^t = 0{\cdot}183493\ t - 0{\cdot}000282\ t^2 + 0{\cdot}000{,}000{,}466{,}666\ t^3$ (6)

" " 400° to 1,150° $q_0^t = 0{\cdot}099\ t + 0{\cdot}00003375\ t^2 + 6{\cdot}55$ (7)

Example: To find the heat evolved by one kilogramme of iron in cooling from 500° C to 0° C, substituting 500 for t in formula (1), we get the following:

$$q_0^{500} = 0{\cdot}11012 \times 500 + 0{\cdot}000{,}025{,}333{,}33 \times \overline{500}^2 + 0{\cdot}000{,}000{,}054{,}6666 \times \overline{500}^3$$
$$= 68{\cdot}24 \text{ calories.}$$

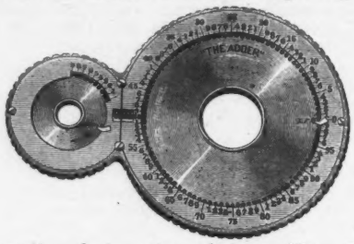
The mean specific heat between 500° and 0° $= \frac{68{\cdot}24}{500} = 0{\cdot}136$. To find the quantity of heat evolved by iron in cooling from any higher temperature, say 700°, to 500°, first find q_0^t for 700°, by substituting 700 for t in the appropriate formula, in this case formula (2). It will be found to be 110·875. The quantity of heat evolved in cooling from 700° to 500° will then be 110·875 — 68·24 = 42·635 calories, and the mean specific heat between 700° and 500° will be $\frac{42{\cdot}635}{700-500} = 0{\cdot}213$. I must caution the reader that these numbers apply to pure iron, and that it is not known to what extent the presence of impurities change them. Hence the need of using iron as nearly free from impurities as possible, and also free from oxidation.

Ship Railways.—A project is on foot to lay a ship railway across the counties of Devon and Somerset, between Bridgwater and Seaton, in order to connect the Bristol Channel with the English Channel, so that vessels up to 1,000 tons register might get direct access to London and the Channel ports with coal and iron from South Wales. The proposed ship railway would be upon the flexible car systems invented by Mr. Smith, harbor engineer, Aberdeen, and would be 36 miles in length, and is estimated to cost, with rolling stock complete, about £2,000,000. This railway is to take the place of the ship canal which was projected for this route two years ago, the cost of which would have amounted to £6,000,000. Besides being very much lower in first cost, the ship railway will, it is expected, afford greater facilities for shipping, and when not used for ships two double tracks of rails will be available for ordinary railway traffic. The scheme is in the hands of Mr. Walter Robert Kinniple, by whom at the Edinburgh Exhibition a specimen ship railway was laid down, consisting of 1,200 feet of double line railway, carrying a flexible car which is capable of carrying boats of 38 feet in length, containing each 30 passengers.—*London Iron and Steel Trades Journal.*

WEBB'S ADDING MACHINE.

The word "adder" naturally suggests snakes. The adder we write of now, however, has nothing more serpentine in its composition than its certainty of "getting there." It is a very ingenious contrivance, by which any numbers of columns of figures can be added up without the slightest possibility of an error. No more wrong "carry overs" need send the wearied pencil of the clerk or bookkeeper trotting up and down columns of figures. No second addition is needed to verify the first, before the resulting total is accepted as correct, when this little adder is used.

Its mechanism is marvelously simple, relatively to the thought and working out required in its contrivance. In appearance it resembles a very flat blacking box, and it is about four inches in diameter and a third of an inch thick. The "adder" was invented by Mr. Charles Henry Webb, a litterateur, who writes over the *nom de plume* of "Paul Jones."



After a short practice, the operator, who can either affix it to a desk or use it in his hand, can add figures with this machine as rapidly as without. The advantages are that no mental effort and strain are required, absolute accuracy is secured, and one may stop in the middle of a column of figures and resume the sum at any time where he left off. It is a common experience in offices to be disturbed just in the middle of a long column of figures by some one anxious to impart his or her views on the weather or some other exciting topic. Then the total reached slips from the mind, and the figurer has to start over again. With the adder at one's side one may stop a dozen times and the result reached is there mechanically fixed. Three columns can be added simultaneously just as well as one. All that is necessary is to insert a metallic point in a hole on the large dial at the figure required and turn an inner dial round to "0" for the units, and the same operation for hundreds on the smaller dial. The resultant sum is indicated in the small square space between the two dials. In adding units the hundreds carry themselves automatically. For lumbermen, miners and others who have to work in the open air and figure on pads or in note books, the adder will prove of service, every sum being added as fast as indicated by the pointer.

PORTER ZINC AND OTHER MINES OF JASPER COUNTY, Mo.

This valuable mining property, consisting of one and one-half acres, located at Carthage, Jasper County, Mo., is owned and operated by Mr. M. S. Porter, who purchased it last spring from Mr. Lamb for $15,000. It is developed by three vertical working shafts varying from 105 to 200 feet in depth, and levels which run from the shafts on the ore bodies. An upraise is now being made from the 200-foot level. It shows a face of over 50 feet of zinc blende and calamine ores. In fact, all development has exposed large bodies of ore. The property is producing an average of 120 tons zinc blende and 40 tons calamine per month. The zinc blende is a very fine crystallized ore of high grade, and brings the highest market price; the calamine is in good demand at an average price of $16 per ton. The surface equipment of the mine consists of three large boilers and engines, a complete concentrating plant and two direct acting Cook steam pumps. The surface works are lighted by an arc and incandescent electric light plant. Mr. Porter is now putting in position a 100 incandescent light machine to furnish light underground. The Porter is the first mine in the district to use electric light. Carthage, although a comparatively new mining district, embraces a number of producing mines, among which might be mentioned the Myers and Jennison, Hubb and Puckett, Little Jersey and Jasper County Mining Company. Quite an amount of prospecting is being carried on, and some rich strikes are reported.

Rock Drilling Contest in Montana.—A rock drilling contest was held to Butte, Montana, on the 28th ult. It was between John Ahearn, of Leadville, champion of Colorado, and William Page, champion of Montana, and was won by the Colorado champion by seven-sixteenths of an inch, Ahearn having sent the steel into the rock $14\frac{7}{16}$ inches to Page's 14 inches. Mike Ford turned for Ahearn and Tom O'Neill for Page. Jerry Mullen acted as final judge. Page lost 24 blows owing to the sticking of his drill. The back hole, breast high, was drilled. About 1,000 people witnessed the contest.

A New Photometer.—A new photometer based upon the action of light upon iodide of nitrogen, which has recently been brought forward by M. Lion, is described in the following manner by the *Electrical World*. The iodide is prepared by the action of ammonia upon iodine, and is preserved in its "mother liquor." The apparatus consists of two closed metallic vessels, the bottoms of which are of glass. The vessels are connected by a sensitive differential pressure gauge and the light from the standard and from the source which it is desired to compare with it is directed so as to strike the glass cups in a vertical direction. If the two reagents are equally illuminated, and only then, they will give off equal volumes of nitrogen. In the former case the manometric columns remain steady, in the latter case the excess of pressure will be indicated by an alteration in their levels, and the light is shifted about until a balance is obtained. If the inventor's statement—that the volume of nitrogen liberated is strictly proportional to the intensity and duration of the illumination—be correct, we have at last within sight a photometer in which the personal equation of the human retina is eliminated.

HOW THE BESSEMER PROCESS WAS INVENTED AND PERFECTED.

As Described by Sir Henry Bessemer.

The following letter was read at the meeting of the Foreign Iron Masters in Pittsburg, Pa.:

It is with great pleasure that I accede to your request to furnish you with a brief outline of the circumstances which led to the invention of my steel process, the more so on account of the generous interest you have always taken in the invention, notwithstanding that it aims at the overthrow of the older methods of producing malleable iron, in the production of which you have obtained so distinguished a position.

At the time of the Crimean War I had invented a mode of firing elongated projectiles from a smooth-bore gun, the rotation necessary to insure their proper position during flight being obtained by utilizing a portion of the powder gas to produce rotation by reaction, after the manner of producing rotation in turbines, and not by the rifling of the gun, consequently rendering all smooth-bore guns at once suitable for firing elongated shot or shell. I of course offered this plan to our own government, but it was discarded without a trial.

A little after this period I happened to be on a visit for a week or two with Lord James Hay at the house of his daughter at Paris. During this visit our host gave a farewell dinner to General Hamlin and several other distinguished officers in the French Army, who were going out to the Crimea.

Among the guests on this occasion was Prince Napoleon, and while taking a cigar in the library after dinner, the conversation turned naturally enough on artillery, and I then mentioned my system of firing elongated projectiles from smooth-bore guns. The Prince was so impressed with the importance of this idea that he said he was sure that his cousin, the Emperor, would be much pleased if I would explain my invention to him, and that he would get an appointment made with the Emperor for this purpose. This was done, and I had a long and interesting discussion with His Majesty, whom I found most thoroughly conversant with the whole subject of artillery.

His Majesty, in the kindest possible way, gave me a carte blanche to make any experiments I desired at Vincennes.

A great many 30-pounder elongated projectiles were made, and were fired from 4½-inch 12-pounder smooth-bore cast-iron gun at the Polygon at Vincennes. They were fired through a succession of thin wooden targets placed 100 metres apart, through all of which they cut circular holes, thus showing that they went end on; a thin coat of black japan had been purposely put on them, and when the shots were recovered from the bank in which they were lodged the coat of japan was seen to be partially scraped off in spiral lines, caused by their passage through the wooden target; the angle of these scratches, being carefully taken, showed that from 1½ to 2¼ rotations had taken place in the length of the gun.

After many hours' practice, on a cold December day, we retired to the officers' quarters in the old fortress of Vincennes, and while standing around a blazing wood fire, sipping some hot spiced wine, Commandant Minie (the inventor of the rifle) observed that "although the rotation of the shot was effected, unless we had something better to make our guns of, such heavy elongated projectiles could not be used with safety." This casual observation was the spark that has kindled one of the greatest industrial revolutions that the present century has to record, for during my solitary ride in a cab that night from Vincennes to Paris I made up my mind to try what I could to improve the quality of iron used in the manufacture of guns.

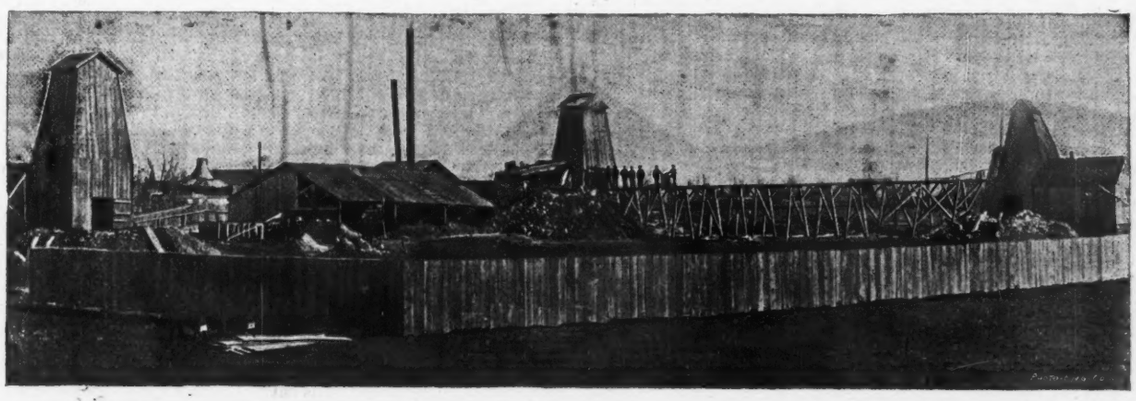
My knowledge of iron metallurgy was at this time very limited, but this was in one sense a great advantage to me, for I had very little to unlearn, and so could let my imagination have full scope. After many months of trial and much building up and pulling down of reverberatory furnaces, I cast a small model gun; the iron was very white, and, in turning it, little short curly shavings were cut off. It was wonderfully tough for cast iron, but wonderfully brittle if classed as wrought iron. The little model gun looked very beautiful when highly polished, and I took it to Paris and begged the Emperor to accept it as the first fruits of my studies of the metallurgy of iron. He expressed himself much pleased with it, and complimented me on having achieved a step in the right direction, and with his own hands placed it in a bureau, saying, "Some day it may become an interesting relic."

About this period I began to fully appreciate the fact that if I could improve cast iron and render it malleable, and still retain its fluid state, that, apart from its use for artillery, it would be of the greatest commercial value for all engineering purposes. I therefore pursued my experiments with greater ardor than ever, for I was convinced that I was on the eve of producing a quality of metal that would supersede wrought iron.

At this time I devoted myself exclusively to these investigations, which were very costly, and I became most anxious to obtain the opinion of some able engineer as to the value of my invention, lest I might be deceiving myself and living in a fool's paradise.

I consequently consulted Mr. George Rennie, the eminent civil engineer. I showed him a small upright fixed cylindrical converter, and in it we made a charge of 7 cwt. of Blaenavon pig iron into an ingot of malleable iron. Mr. Rennie was in raptures with the result, and said: "You must not keep this light under a bushel for a single day longer; and, by-the-bye, there is a first-rate opportunity for you. The British Association meet at Cheltenham next Tuesday; read a paper there by all means. I am President of the Mechanical Section; it is true all the papers are arranged, but if you will write a paper I will take the responsibility of putting it first on the list." He kept his promise, and I read my paper on "The Manufacture of Malleable Iron without Fuel," and which appeared verbatim in next day's *Times*.

The entire iron trade of the kingdom was startled by the facts detailed in this paper, backed as they were by two small bars of malleable iron, one of which had been piled and rerolled; a few days later the ironmasters came trooping up to London to see the new process. There are many interesting incidents connected with these visits, which I cannot trespass on your time to relate; but some idea of the excitement may be gathered from the fact that, notwithstanding the imperfect state of the process at that time, I was actually paid £27,000 for licenses granted within one month of the reading of my paper. At many iron works the managers set to work to test the invention in the rudest possible manner, with such means as they had at their disposal, all of which attempts were failures. In my experiments I had used Blaenavon pig iron, which was successful; and at that time I had no idea that other brands of iron would fail in the manner they did. No sooner were these failures known than an extraordinary revulsion of feeling was manifested, and the most perfect distrust of the invention became universal. The public press, which had spoken of it in such glowing terms, now condemned it as impracticable, and spoke of it as "a brilliant meteor that had flitted across the metallurgical horizon, dazzling a few enthusiasts, and then vanishing for ever in total darkness."



PORTER ZINC MINE, CARTHAGE, MO.

Prior to this invention pure malleable iron in a fluid state was wholly unknown; indeed, whole days of exposure to the most powerful furnaces then in use entirely failed to bring this material into a state of fusion, notwithstanding which I proposed to convert ordinary melted cast-iron into this malleable fluid state, in quantities of five tons at a single operation, and in the short space of 15 minutes, by the mere chemical action of cold atmospheric air, and in the entire absence of any fuel whatever, except that which existed in the form of carbon and silicon in the crude metal itself. It is not surprising, therefore, that the ironmasters, as well as the whole press, joined in one general chorus of condemnation of what they believed to be a perfect chimera, which none but a wild enthusiast could have believed to be possible. I knew far otherwise, but this was no time to argue the question. Words would have been of no avail, so I set earnestly to work to try and master the difficulty that had so unexpectedly arisen; this was no easy task.

All the old investigations had to be gone over again; experiments on a much larger scale, with larger and more powerful machinery, were found necessary; but the difficulties to be surmounted had reference more to chemical than mechanical questions. A laboratory was therefore fitted up, and I engaged the services of a professor of chemistry, at a high salary, to make an analysis of all the iron, and the materials employed in our experiments, as well as a systematic analysis and classification of all the results obtained. The very large scale on which these operations were carried out involved a considerable outlay in various ways, but there was no slackening of exertion, no cessation of the severe mental and bodily labor. In this way another long and weary year had passed, and but little real progress had been made toward the removal of the difficulty; many new paths had been struck out, but they had led to no practical results. Several weeks were sometimes necessary to make and fit up the apparatus required to test each new theory as it was formulated, and it too often happened that the first hour's trial of the new scheme dashed all the high expectations that had been formed, and we had again to retrace our steps; thus week after week went on amid a constant succession of newly-formed hopes and crushing defeat, varied with occasional evidences of improvement. I,

however, worked steadily on. Six months more of anxious toil had glided away, and things were much in the same state, except that many thousands of pounds had been uselessly expended, and I was much worn by hard work and mental anxiety. The large fortune that was almost within my grasp seemed now far off; my name as an engineer and inventor had suffered much by the defeat of my plans. Those who had most feared the change with which my invention had threatened their long vested interests felt perfectly reassured, and could now safely sneer at my unavailing efforts; and, what was far worse, my best friends tried, first by gentle hints, and then by stronger arguments, to make me desist from a pursuit that all the world had proclaimed to be utterly impossible. It was indeed a hard struggle, and I had well nigh learned to distrust myself, and was fain at times to surrender my own convictions to the mere opinion of others. Those most near and dear to me grieved over my obstinate persistance—but what else could I do. I had the most irrefragable evidence of the absolute truth and soundness of the principle on which my invention was based; and with this knowledge I could not persuade myself to fling away the promise of wealth and fame, and lose entirely the results of years of labor and mental anxiety, and at the same time confess myself beaten and defeated. Happily for me the end was nigh, and in a few more months I had fully succeeded in producing steel worth £50 to £60 per ton from charcoal pig-iron which had cost me only £7 per ton, the conversion of the crude iron into steel being effected by simply forcing minute streams of cold atmospheric air upward through it for a space of 15 minutes.

A DREAM FULLY REALIZED.

Thus was the so-called fallacious dream of the enthusiast realized to its fullest extent, and it was now my turn to triumph over those who had so confidently predicted my failure. I could now see in my mind's eye at a glance the great iron industry of the world crumbling away under the irresistible force of the facts so recently elicited. In that one result the sentence had gone forth, and not all the talent accumulated during the last 150 years, of all the thousands whose ingenuity and skill had helped to build up the mighty fabric of the British iron trade—no, nor the millions that had been invested in carrying out the existing system of manufacture, with all its accompanying powerful resistance, could reverse that one great fact, or stop the current that was destined to sweep away the old system of manufacturing wrought iron, and establishing homogeneous steel as the material to be in future employed in the construction of our ships and our guns, our viaducts and our bridges, our railroads and our locomotive engines, and the thousand and one things for which iron had hitherto been employed· and yet, with all this newly developed power, I was paralyzed for the moment in face of the stolid incredulity of all practical iron and steel manufacturers, which stood like the solid wall of a fortress, barring my way to the victory I had already won. I announced the fact of my complete success to the world, and held in my hands the most undeniable proofs of the truth of my assertion, but no one would now believe it possible. They remembered but too well the great expectations that were excited two years previously by the first announcement of my invention at Cheltenham, and were not again to be disturbed by the cry of "Wolf!" Thus it happened that, after the hard battle that I had fought for so many years, I found myself as far as ever from the fruits of my labor, for not a single iron master or steel manufacturer in Great Britain could be induced to adopt the process.

Anxious to possess still further practical proofs of the value of my invention, I made a few hundred weight of steel bars, at my experimental works in St. Pancras, of all the sizes and special qualities required in an engineer's workshop. These I took to the works of my friends, the Messrs. Galloway, engineers, of Manchester; and, unknown to any of their workpeople, these bars were given out and employed for all the purposes for which steel had hitherto been used in their extensive business. So identical in all its essential qualities was this steel with that usually employed by their workmen, that during two months' trial of it not the slightest idea or suspicion that they were using steel made by a new process was entertained by them—in fact, they were accustomed to use steel of the best quality, costing £60 per ton, and they had no doubt whatever but that they were still doing so.

I may here remark that this tool-steel was made from Swedish charcoal pig-iron casting, delivered at Sheffield at £7 per ton, and it was with this high-class raw material that our firm continued, for about two years, to manufacture tool-steel for engineers, for which we obtained £44 per ton, and with which such firms as Sir William Fairbairn, Sir Joseph Whitworth, Messrs. Sharp, Stewart & Co. were regularly supplied up to the time when larger and more profitable work had made it not worth our while to continue the manufacture of tool-steel. Indeed, so satisfied were Messrs. William and John Galloway with the crucial test of our tool-steel at their works that they entered into partnership as steel manufacturers with myself, my partner, Mr. Robert Longsden, and my brother-in-law, Mr. Allen.

THE FIRST STEEL WORKS.

We built a steel works in the town of Sheffield, determined to beard the lion in his den and to undersell the trade until we forced them in self-defence to take a license under my patents and carry on my process. We at once got to work and dropped £10 per ton on railway tires, etc. This soon brought the trade to a proper frame of mind. Sir John Brown & Co. applied for a license; this was soon followed by Messrs. Charles Cammell & Co., and licenses were also granted to many other firms. Of course we thus created a strong rivalry with our own firm and forced our own prices down; this we were fully prepared for, as it still left a large margin of profit.

Some idea may be formed of its importance as a manufacture when I state the simple fact that on the expiration of the 14 years' term of partnership of our Sheffield firm, the works, which had been greatly increased from time to time entirely out of revenue, were sold by private contract for exactly 24 times the amount of the whole subscribed capital of the firm, notwithstanding that we had divided in profits during the partnership a sum equal to 57 times the gross capital; so that by the mere commercial working of the process, apart from the patent, each of the five partners retired after 14 years, from the Sheffield works, with 81 times the amount of his subscribed capital, or an average of nearly cent per cent every two months—a result probably unprecedented in the annals of commerce.

THE EXCURSION OF THE FOREIGN ENGINEERS.

Special Correspondence of the Engineering and Mining Journal.

On Saturday morning the party, numbering over 600 persons, left Jersey City by two special trains on the Pennsylvania railroad. No stop was made until Tacony was reached, just inside of the Philadelphia city limits. Here the excursionists left the train and made a tour through the famous saw and file works of Disston & Sons. The principal features of interest were the open-hearth and crucible steel works—in which were seen the apparatus for compressing the fluid ingot for the purpose of freeing it from blow-holes—the Loomis fuel-gas works, the forge fires heated by water gas, the file-cutting machinery, and the complete process of manufacturing saws of all kinds. Much attention was given by some of the officers of the Iron and Steel Institute to the gas works. It consists of four cylindrical producers, each using four tons of Cumberland coal per day. The draft is produced by an exhausting machine, similar to a Baker or Root blower, above each producer, each blower being run by a separate vertical engine. Each producer is run as an ordinary coal gas producer for about six minutes, until the fuel becomes highly incandescent; the air is then shut off and steam admitted, the producer then makes water gas for five or six minutes. The two gases are kept separate, and are stored in small holders, from which they are led to the furnaces, the water gas being used for the forges for heating file blanks and other small purposes, and the ordinary gas for large heating furnaces.

The great advantage of water gas over ordinary producer gas for heating small forges was clearly explained to the visitors, the gas being of high heating value and can be ignited like illuminating gas or natural gas in a cold furnace, and is at once ready for work, while the producer gas can only be used for actual work after the furnace has been thoroughly heated. No data were given, however, to show how the two gases compare in economy for ordinary heating and melting furnaces, as the producer gas is not measured, and no test of the total heating value which may be derived from a ton of coal has been made. The intelligent advocates of water gas are now no longer making the extravagant claims that were made a few years ago, but are confining their claims to its uses for special purposes, such as those for which it is used with great advantage at the Disston works.

After completing the tour of the works, the party embarked on the steamer "Columbia," and were taken 30 miles down the Delaware river, passing Philadelphia and Chester, and coming in sight of the Edgemoor Iron Works. The Philadelphia local committee had provided excellent luncheon and music. At five o'clock the boat reached Philadelphia, and members of the party were taken to the several hotels they had selected. Saturday evening and Sunday were devoted to rest, which was greatly needed after the week's labor and pleasure. On Monday, under the guidance of the Philadelphia committee, the party divided into several sections, to make the tour of different places of interest. The following is a list of the excursions.

1. Up the Schuylkill Valley, by invitation of the Philadelphia & Reading Railroad Company, to Phœnixville, Pa., 27 miles distant. Visit the blast furnaces and rolling mills of the Phœnix Iron Company and the works of the Phœnix Bridge Company and, returning to Philadelphia, the Geo. V. Cresson Machine Works, Harrison Boiler Works, Link Belt Engineering Company.
2. Ladies' Club House, Germantown Cricket Club grounds, Manheim.
3. City Hall, United States Mint, and other points in the central portion of the city.
4. Fairmount Park and Zoölogical Gardens.
5. Baldwin Locomotive Works, A. Whitney & Sons Car Wheel Works, Wm. Sellers & Co. Tool Works, Bement, Miles & Co. Tool Works, Gordon, Strœbel & Laureau Machine Works, Southwark Foundry.
6. Camden Iron Works, by special train from Market Street Ferry.
7. Delaware River Ship and Engine Works, Chester, Pa., and Edgemoor Iron Works, Wilmington, Delaware.
8. Motive Power of the Philadelphia Traction Company, Sansom street, above Eighth, and Market street near Twentieth.

On Monday evening a reception was tendered the visiting associations at the Academy of Fine Arts, Broad and Cherry streets.

Unfortunately, the pleasure of the excursionists on Monday was greatly marred by a rain which continued all day. Nevertheless, nearly all the programmes were faithfully carried out. A large party went by special train to Phœnixville and visited the iron works there. It cannot be said that this trip greatly impressed the visitors. The blast furnaces are old-fashioned, and the beam-rolling is no novelty to either the Englishmen or the Germans. Far different, however, was the trip to the several machine shops in Philadelphia. The Baldwin locomotive works came in for a considerable amount of praise on account of its extent and the rapidity with which locomotives are turned out. There are now 4,600 men employed, and last year 827 locomotives were finished. This year the number is expected to exceed 900. The rapidity with which the workmen handle tools and material was especially noticed, and surprise was expressed that they work 60 hours per week, whereas in the shops in England they work only 54 hours, a half holiday being given on Saturday. It was conceded the American works harder than his English brother, and therefore deserves more pay. The machine and boiler shop arrangement and machinery were, however, condemned unsparingly. An English boiler-maker told the writer that the boiler making methods of the Baldwin locomotive works are twenty years behind the age, and they were also behind the age in machine tools for taking heavy cuts. The American locomotive of course was condemned as being inferior in workmanship and in economy of fuel to the English, although it was conceded that it might be better adapted to rough tracks. Sir James Kitson, the president of the Institute, is the senior partner of Kitson & Co., locomotive builders at Leeds, but he was extremely reticent in giving any opinion about these works.

The machine shop of Wm. Sellers & Co. was very hastily inspected. The new patterns of tool grinders and the electric traveling crane were most favorably noticed. The high speed of reversing of planer tables and their freedom from shock when reversing were highly praised; but the English naturally do not take kindly to such high speed, and wonder why we do not copy the English practice of making the planer cut during both the forward and back motions.

At Bement, Miles & Co.'s tool works no important new work was in the shops, but the visitors had a fine chance to see the works in process of reconstruction. An entire new works is being built by piecemeal over the old works. Heavy side walls, carried up to a great height, are built, and they are being equipped with 30-ton traveling cranes. An extremely strong gallery is built all around the main shop, the girders being built beams, and on it are to be placed a number of the machine tools. Some of the English engineers condemned this practice of putting the tools upstairs, as the floor could not possibly be made rigid enough to give the requisite steadiness to tools making heavy cuts. In England they are getting rid of upper floors and galleries for tools, and placing them all on solid foundations on the ground floor. Mr. Bement, however, seemed perfectly certain that the gallery was as strong and rigid as would ever be required. One English idea is being adopted in these works, the saw-tooth roof, with glass on the north side, giving the best possible light for the shop. The new works of the Straight Line Engine Company have adopted this roof, as also has the Botany Worsted Mill, in Passaic, N. J., and it bids fair to become as common here as in Europe.

At Whitney & Sons' car wheel works the visitors saw something entirely new to them, the making of car wheels of cast iron, which is unknown in England, and, of course, thought undesirable. They expressed astonishment at the large records made by these wheels and the extraordinary character of the tests which they undergo before acceptance. The patent contracting chill invented by Mr. Whitney, and the method of making it, were universally admired.

The reception at the Museum of Fine Arts in the evening was a brilliant affair, as all Philadelphia receptions are, and the guests appeared thoroughly to enjoy themselves. Many of them engaged in dancing, of which they seem exceedingly fond.

On Tuesday the grand excursion in three special Pullman trains began. In handling this great excursion the great organizing power of Mr. William P. Shinn, president of the American Society of Civil Engineers, who acted as chairman of the transportation committee, never was more clearly exhibited. There were 517 persons on the excursion, and each one had a ticket given him, assigning him to a particular berth in a particular car. Each car had a distinguishing letter, the whole alphabet from A to Z being required for the three trains, and there was not the slightest confusion. An aid was appointed for each train, who did everything possible for the comfort of the guests. Lunch was provided by Mr. G. Dawson Coleman at the magnificent picnic ground at Mt. Gretna, near Lebanon, Pa. A trip on the 24-inch railroad to "Gov. Dick" mountain was intended, but a dense fog on the top of the mountain caused this to be given up. The guests were then taken to the Cornwall ore bank, which was thoroughly inspected. Here for the first time every foreigner expressed unbounded astonishment; and well he might, for there is probably no other such deposit of iron ore in the world. The figures given concerning it were as follows: Length, 4,400 feet; three hills; widths of deposit, 400, 600 and 800 feet; 30,000,000 tons of ore in sight above water level. Borings have been made 300 feet below water level without finding any limit to the deposit and the amount of ore below water level down to this depth is estimated at 40,000,000 tons. The ore is improving in quality as it is being mined, or rather cut out of the hill, farther from the surface, and now averages about 50 per cent. of iron, the gangue being nearly self fluxing. The product of the bank is increasing from year to year, and preparations are being made to raise, or rather lower (as the ore is cut and slid down, instead of being hoisted), over a million of tons in 1891. The cost of mining and loading on cars has been as low as 17 cents per ton. The ore makes a pig iron containing not over ·04 in phosphorus.

After leaving the ore bank the trains proceeded to the Colebrook furnaces at Lebanon, which were briefly inspected, and then the trains were started at about 6 P. M. for Altoona. Two dining cars were attached to each train, and the important duties of the commissary were fulfilled without a hitch. The inexperience of the foreigners with sleeping cars afforded considerable amusement to the Americans, but the strangers were finally initiated into the mysteries, and shortly after midnight the last of them had retired for the night.

On Wednesday morning the sun shone brightly, after being bidden for the two days, and the tour of the Altoona locomotive and car shops was most satisfactorily accomplished. The first point of interest was the new locomotive shops at Juniata, about two miles from the Altoona station. These are not yet running, but are being equipped with machinery, and as the engines are in place, with the main lines of shafting, a large number of the machine tools were put in motion for the benefit of the visitors. Mr. Aspinall, the chief of the new locomotive works of the Lancashire & Yorkshire Railroad, at Horwich, which were visited by the American engineers last summer, and which are admitted to be the finest in Europe, spent the whole of Tuesday in the shops at Altoona, and he was quite hearty in his praise of them. He thinks they compare well with his own shops, in buildings, arrangement and equipment. They are probably the best lighted shops in America, the windows on each side being of enormous size. Mr. Platt, of Fielding & Platt, of Gloucester, was probably the best pleased man of the party, for the boiler shop is equipped with a full set of hydraulic punches, presses, shears, etc., on the Tweddell system, many of which were made by his own firm, as the name plates indicated, and all the others were made by the Morgan Engineering Company, Tweddell's representative in America. Those who had criticised the Baldwin locomotive works' boiler shop as being behind the age had to admit that the Altoona shops were in the very first rank; but the Englishmen had the pleasure of taking the credit to themselves, as "it is all so very English, you know."

Lunch was provided by the Pennsylvania Railroad Company at the Logan House in Altoona, and then the trains left for Johnstown. The scenery on the Allegheny mountains was at its best, and was highly appreciated, especially by the English ladies, one of whom said, "I did not think that any scenery could be so grand."

Every one was on the *qui vive* between South Fork and Johnstown to watch for results, still perceptible, of the devastation wrought by the Johnstown flood last year, and when the trains reached Johnstown the whole party was transferred to two observation trains, made by erecting rough benches in gondola freight cars, and taken up the river by the Baltimore & Ohio branch to Conemaugh, to see along the road the ruins yet remaining. The freight trains were then taken through the yard of the Cambria Iron Company, past all the blast furnaces, to the lower end of the works, where the barb wire fence machines were seen, and then back on the other side to a point near the Bessemer works, where the party alighted and proceeded through the works. The first point visited was the wire rod mill, and then the converting house. Two 12-ton converters were at work, and here the visitors had their first opportunity to see how fast the Americans make Bessemer steel. The rail mill was then visited, and the bloom charging and drawing crane and the two sets of rolls for finishing the rail received especial attention This new mill was admited by the visitors to be superior to any in England, on account of its great simplicity, the perfection of handling entirely by machinery, and the rapidity of operation. Two rails are made from every bloom. The writer timed the operation between the successive completion of each pair of rails, and made the time one minute 10 seconds one minute, one minute seven seconds, and one minute nine seconds, or an average of 33¾ seconds for a rail. He also timed the old rail mill, in which the handling of the bloom is done by hand, and one rail made at a time, and made the average time 48 seconds per rail, although many more men were required than at the new mill.

After visiting the blooming mill the party took the trains for Pittsburg, which was reached about 8 o'clock. Considerable trouble was had by the Pittsburg committee in locating all the party for the night, on account of the fact that all the hotels in Pittsburg was already overcrowded by visitors to the Exposition, and many of the hotel proprietors failed to keep their promises to the committee as to the number of rooms they would reserve. The committee worked like beavers trying to straighten matters out, and by 10 o'clock had every one of the party housed for the night, although several had to be placed in the sleeping cars, and another group were accommodated in temporary extemporized quarters in the Westinghouse building. The Germans took the temporary discomfort quite contentedly, and were unstinted in their praise of the labors of the committee in their behalf.

On Thursday morning the troubles of the guests appeared to have been forgotten, and they assembled in full force in Carnegie Hall, in Allegheny, where they were entertained on arrival by an organ concert. The international meeting was presided over by Sir James Kitson, and he was surrounded by the members of the council and by some of the officers of the American societies. The first address was by Mr. John H. Ricketson, of the Pittsburg reception committee, who after paying tribute to the attainments of the distinguished foreign metallurgists, whom he mentioned by name, gave a description of the geographical position of Pittsburg, and a few figures representing the greatness of its industries and natural resources. Mr. Ricketson is one of the most effective of the American orators, and what he said was most heartily applauded.

Sir James Kitson acknowledged the address of welcome and read an address, in which he eulogized the great British metallurgists, engineers and inventors, past and present, mentioning Watt, Trevethick, Cort, Neilson, Arkwright, Whitworth and Bessemer. The most interesting part of the address consisted of a letter in Sir Henry Bessemer's own handwriting, in which he gave a graphic description of the way in which he had been led to make experiments on the purification of iron, which resulted finally in the Bessemer process (printed on another page). The manuscript was presented by Sir James to the American Institute of Mining Engineers, to be kept in its archives. Sir James on the conclusion of his address referred to the remarkable results of the recent experiments in nickel steel, and stated that all the patents on it had now been combined in a syndicate, and works were building in England, and about to be built in France and in the United States, for its manufacture.

Sir Lowthian Bell then read a paper on "The Probable Future of the Manufacture of Iron." It had been in print in the hands of the members since the New York meeting. The paper is wrongly entitled, for it described the past history of the manufacture rather than its future, and consisted largely of a theoretical discussion of the reactions of the blast furnace as compared with the direct process, upon which the paper was severely critical. Water gas also came in for Sir Lowthian's criticism. He said "he might as reasonably expect a hydraulic wheel to pump back all the water which had served to move it as to hope to be able economically to burn any combustible twice over, for that is the impossible problem the water-gas makers ask us to accept as possible." The paper, as far as it had any reference to the future of the manufacture of iron, merely stated in effect that the future would be the blast furnace, and not the direct process.

The discussion was opened by Mr. Geo. W. Maynard, of New York. He quoted Sir Lowthian's remarks as to the futility of the expectation of success of the direct process, and told him that he would see the process in actual and most successful use at the works of the Carbon Iron Company in Pittsburg. Sixteen furnaces were in operation, each producing twelve heats in 24 hours, 2,400 pounds of ore being charged to a heat, and 1,400 pounds of squeezed blooms of 97 per cent. iron being obtained from each heat, the labor being one furnace man and one helper to each furnace. He described the process at length, and stated that for many conditions of ore and fuel it would prove to be a most successful process. From the ore to the squeezed bloom the loss was only 6¾ per cent. Mr. H. M. Howe, of Boston, and Mr. Snelus, of England, followed, both expressing strong hopes of the success of the direct process in some locations and under some conditions. Sir Lowthian Bell closed the discussion, calling attention to the fact that the fuel consumption in the Carbon Iron Company's process was greater than that in the combined blast furnace and Bessemer process, and that as it was absolutely essential to crush to a fine state of division and to thoroughly mix the ore and the coke, the labor and expense of this preparation of material must be much greater than in the blast furnace. He stated that he had witnessed Mr. Thomas S. Blair's experiments in Pittsburg in 1874, and then predicted their ultimate failure, although he said that process was as perfect a direct process as could well be imagined. The writer after this discussion asked a prominent iron and steel manufacturer in Pittsburg what opinion was held by Pittsburg people generally concerning the ultimate success of the Carbon Iron Company's direct process, and he replied that he believed that there was no one in Pittsburg who believed it would succeed, except those who were interested in it. As the works are on the list of those to be visited, the guests will have an opportunity to judge of this question for themselves.

A paper by Sir Nathaniel Barnaby, on "The Protection of Iron and Steel Ships," was read by title and discussed by Lieut. Barber, U. S. N. He expects great results from nickel steel, and believes that a 14,000-ton battle ship can be made practically unsinkable, and so invulnerable that no shell can penetrate it. He did not say what would be the result if two such ships should engage in battle, nor how we should defend our shores from attack by such a ship.

A paper by A. E. Seaton, on "The Development of the Marine Engine," was then read by title, and the meeting adjourned without discussion. A great variety of excursions are offered by the Pittsburg committee, to the election of the visitors and a reception at the Duquesne Club will take place in the evening.

The Use of Petroleum Engines in Mines.—The Walsall Wood Colliery Company, Limited, having introduced into their mine one of the Priestman petroleum engines, the question was raised by Mr. W. B. Scott, inspector of mines for the district, whether the use of such an engine underground was dangerous to the men employed in the mine; and that question formed the subject of an arbitration, which has just been concluded. The arbitrators were Mr. John Williamson, of Hednesford, mining engineer (for the mines inspector), and Mr. George Lewis, of Derby, mining engineer (for the colliery company), with Mr. Alfred Young, barrister, as umpire. Various experiments were made, and subsequently the evidence of several mining engineers and other experts was taken. The result is that the arbitrators (without appealing to the umpire) find that the use of the engine is not dangerous.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent Office:

TUESDAY, SEPTEMBER 23d, 1890.

436,768. Engine. Albert J. Bates, Joliet, Ill.
436,807. Concentrator. Charles E. Seymour, Hurley, Wis.
436,808. Ore Concentrator. Charles E. Seymour, Hurley, Wis.
436,812. Apparatus for Making Hydrogen Gas. James W. Tallmadge, Boston, Mass.
436,815. Coal or Rock Drill. Isaac Wantling and James T. Johnson, Peoria, Ill.
436,824. Winding Drum. James M. Chatfield, Thomaston, Conn.
436,828. Hoisting Engine. Otto Flohr, Buffalo, N. Y.
436,830. Steam Actuated Valve. Daniel E. Kempster, Boston, Mass.
436,840. Oil Transporting Tank and Wagon. Hugh McFarlane, Chicago, Ill.
436,843. Electric Controller for Power Mechanisms. Robert D. O. Smith, Mishawaka, Ind.
436,845. Heating Feed Water. Clarence H. Uhler, Lebanon, Pa.
436,856. Furnace Charging and Discharging Apparatus. Milton P. Higgins, Worcester, Mass.
436,857. Coupling for Electric Wires. Forrest R. Jones, Kearney, Neb., Assignor of one-half to James G. White, New York, N. Y.
436,858. Fluid Pressure Governor. Granville Kimball, Chicago, Ill.
436,867. Rotary Engine. Byron B. Bowar, Bainbridge, Ga.
436,881. Apparatus for the Manufacture of Oil-Gas. Daniel E. Teal, Oneida Castle, Assignor of one-half to Harrison Clark, Norwich, N. Y.
436,882. Apparatus for Making Coke and Gas. Charles N. Trump, Wilmington, Del.
436,889. Point for Well-Sinking Machines. Joseph R. Coffin and William B. Coffin, Bliss, Neb.
436,894. Brick Pressing Machine. William L. Holman, Renovo, Pa., assignor of one-half to Thos. A. Roberts and Patrick H. Sullivan, same place.
436,895. Process of Electro-Depositing Aluminum. John A. Jeancon, Newport, Ky.
436,898. Manufacture of Explosives. Hiram S. Maxim, London, England.
436,901. Speed Regulating for Dynamos. Samuel E. Nutting, Chicago, Ill.
436,914. Apparatus for Laying Pipes. Johann F. Fischer, Worms, Germany.
436,915. Apparatus for Jointing Pipes. Johann F. Fischer, Worms, Germany.
436,918. Apparatus for Burning Hydrocarbon Oil. John S. Hull, Baltimore, Md.
436,927. Lubricator. Charles C. Rueger, Butte City, Mont.
436 928. Apparatus for Handling Coal, Ore, or Other Freight. Richard Thew, Caledonia, O.
436,929. Die for Brick or Tile Machines. William M. Wallace, Willoughby, O.
436,931. Traction Engine. Daniel Best, San Leandro, Cal.
436,936. Explosive Engine. John W. Eisenhuth, San Francisco, Cal., Assignor, by direct and mesne assignments, to the Electric Vapor Engine Company, same place.
436,968, 436,969. Method of and Apparatus for Drawing Wire. Thomas A. Edison, Menlo Park, N. J.
436,970. Apparatus for Transmitting Power. Thomas A. Edison, Llewellyn Park, N. J.
436,975. Gas Generator. Chauncey W. Gibson, Detroit, Mich.
436,976. Apparatus for Repairing Furnace Linings. George W. Goetz, Milwaukee, Wis.
436,994. Stand Pipe for Ammonia Gas Generators. Mathias Poschinger and Henry Vogt, Louisville, Ky.
437,017. Ore Mill. Horace J. Clark, Westfield, N. Y.
437,020. Gas Meter. John W. Culmer, New Brighton, Pa.
437,040. Steam Boiler. Clark Otis, Farmer Village, N. Y.
437,041. Steam Pipe Covering. Lansing A. Palmar and John Baier, Kansas City, Mo.
437,051. Cylinder Head for Rock Drills. George J. Slining, Negaunee, Mich., Assignor of one-half to Samuel Mitchell, same place.
437,097. Steam Engine. Peter T. Coffield, New Carlisle, O., Assignor of one-half to Charles H. Paxson, same place.
437,098. Gas Producer. John W. Culmer, New Brighton, Pa.
437,109. Process of Remelting Iron in Cupola-Furnaces. Henry J. Graf, St. Louis, Mo.
437,135. Wire Drawing Drum. William W. Shearer, Port Angeles, Wash.
437,140. Process of Calcining Gypsum. James Sickler, Salina, Kans., Assignor of one-half to Lorin G. Hamilton, same place.
437,153. Railway Tie Plate. Charles D. Halsey, Newark, N. J., Assignor to the Shoulder Tie Plate Company, Philadelphia, Pa.

TUESDAY, SEPTEMBER 30TH, 1890.

437,183. Electric Meter. Richard N. Dyer, East Orange, N. J.
437,210. Electric Street Car. Luther H. Leber, Pittsburg, Pa., Assignor of two-thirds to John L. Swearer, same place, and David J. Richardson, Allegheny, Pa.
437,212. Plaiting Apparatus. Carl Lehmann, New York, N. Y.
437,216. Pump. Carl v. Lude, Arbon, Switzerland.
437,218. Air Brake. Orien B. Martin, Akron, Assignor of one-half to Thomas Hale and John Longanecker, Mogadore, Ohio.
437,219. Smoke-burning Furnace. Orien B. Martin, Akron, Assignor of one-half to Thomas Hale and John Longanecker, Mogadore, Ohio.
437,237. Gas Cylinder for Elevating Heavy Ordnance. John J. E. H. Payne, Liscomb, Tex.
437,249. Riveting Machine. John L. Saxe, Waterbury, Conn.
437,259. Electric Motor Gearing. Joseph J. Sprague, Carthage, Mo.
437,272. Distribution and Regulation of Electric Currents. Franz Wilking, Berlin, and Hermann Muller, Nuremberg, Germany.
437,280. Air Governor or Brake. Frank Briggs, Philadelphia, Pa.
437,284. Combined Metal Working Machine. William G. Budlong, Providence, R. I., Assignor to the Union Machine Company, same place.
437,291. Machine for Simultaneously Threading a Plurality of Bolts. Roderick P. Curtis, Southport, Assignor to Curtis & Curtis, Bridgeport, Conn.
437,300. Air Brake. Leonidas Guillenmet, San Francisco, Cal.
437,315. Apparatus for Producing Gas from Hydrocarbon Oil. John McKay, Titusville, Pa.
437,318. Carbonating Apparatus. William T. Thackeray, Chicago, Ill.
437,320. Hot Air Engine. Simon Vivian, Brooklyn, N. Y.
437,358. Electric Railway System. Charles K. Harding, Atlantic, Iowa.
437,360. Dynamo Electric Machine. William Hochhausen, Brooklyn, N. Y.
437,384. Steam Boiler. Carl Schaefer, Oberhausen, Germany.
437,400. Car Coupling. George Martin and Latharo M. Friar, Rochester, N. Y.
437,417. 437,418. Gearing for Continuous Motion Impression Cylinders. John Brooks, Plainfield, N. J.
437,421. Apparatus for Refining Oil. Christian Dorn and John Carey, Philadelphia, Pa.
437,428. Propelling Device for Electric Cars. Thomas A. Edison, Llewellyn Park, N. J.
437,452. Furnace. Benjamin F. Price, Bloomington, Ill.
437,460. Steam Engine. Edward G. Shortt, Carthage, Assignor of one-half to Charles G. Emery, Brooklyn, N. Y.
437,464. Frog Switch. Vernon A. Tyler, Morris Park, N. Y.
437,469. Galvanic Battery. Gustav A. Liebig and Charles Willms, Baltimore, Md.
437,488. Car Coupling. John T. Friend, Irvine, Ky.
437,501. Electric Generator. William M. Mordey, Lambeth, England.
437,511. High Grade Water-Power Utilizer. Alexander H. Quain, Allie Quain and George P. Warner, Albany, Ore.
437,512. System of Electrical Distribution. Frank B. Rae, Chicago, Ill., Assignor to the Detroit Electrical Works, same place.
437,513. Electrical Switch. Frank B. Rae, Detroit, Mich., Assignor to the Detroit Electrical Works, same place.
437,523. Hydraulic Steering Apparatus. Perry Small, Boston, Mass.
437,534. Upward Pressure Contact Device for Electric Railways. Charles J. Van Depoelk, Lynn, Mass.
437,551. Steam Boiler Feeder. Charles A. I. Babenbreier, Baltimore, Md., Assignor to Laurence C. Brickenstein, Lititz, Pa.
437,570. Welding Metals Electrically. Charles L. Coffin, Detroit, Mich.
437,582. Car Coupling. Oswald L. W. Dietz and Fred. Haaf, Cincinnati, O.
437,586. Method of Process of Working Motor Engines with Hot Gases and Steam. Edward Field, London, England.
437,607. Engineer's Valve for Air Brakes. Charles E. Leeman and Albert W. Jones, Salida, Colo.
437,609. Rock Drill. John J. Martin and Patrick Cunningham, Pinos Altos, N. Mex.
437,611. Gas Retort Furnace. Kerr M. Mitchell, St. Joseph, Assignor of one-half to John Dell, St. Louis, Mo.
437,618. Steam Engine Valve. Franklin Pilkington, Anniston, Ala.
437,634. Car Coupling. Carl Strathmeyer and Wilhelm Gutenberger, Sacramento, Cal.
437,641. Governor for Steam Engines. Joel T. Case, Bristol, Conn.
437,644. Car Coupling Attachment. Alexander H. S. Davis, Washington, D. C., Assignor of one-half to Almon C. Brown, Minneapolis, Minn.
437,663. Armature for Dynamo Electric Machines and Motors. Frank B. Rae, Detroit, Mich., Assignor to The Detroit Electrical Works, same place.
437,667. Electrical Switch. Lucius T. Stanley, Brooklyn, N. Y., and Henry B. Cutter, Philadelphia, Pa., said Stanley assignor to said Cutter.
437,672. Valve Mechanism for Engines. Charles Schmid, Chicago, Ill., Assignor to The American Valve and Governor Company, same place.

TUESDAY, OCTOBER 7TH, 1890.

437,674. Traction Wheel. Aaron Brosius, Fort Wayne, Ind.
437,701. Process of Manufacturing Lead Pigment. George T. Lewis, Philadelphia, Pa.
437,713. Jay H. Newbury and George A. Chapman, Guilderland, N. Y.
437,717. Device for Transmitting Motion. Charlie A. Palmquist, Spokane Falls, Wash.
437,720. Conduit Electric Railway. Ernest M. Reed, Wichita, Kans.
437,735. Coaling Device for Railway Trains. Edward A. Traff, Brooklyn, N. Y.
437,740. Fluid-Pressure Automatic Brake. George Westinghouse, Jr., Pittsburg, Pa.
437,745. Steam Boiler. John Baird, New York, N. Y.
437,754. Electric Meter. Jacob Einstein and Sebastian Kornprobst, Munich, Germany.
437,761. Car Coupling. Alvis E. Lewis and William R. Cosby, Evansville, Ark.
437,763. Electric Meter. Anthony Reckenzaun, Clapham, England, Assignor, by direct and mesne assignments, of part to A. J. De Camp, Charles D. Norton, Charles M. Blanchard, S. M. Buckman, James A. Pentz, Charles Shaffer, Lincoln Godfrey, George W. Hewitt, Erwin Agnew and L. Webster Fox.
437,771. Electric Steam Generator and Water Heater. Henry R. Butterfield, Waterville, Me.
437,776. Gas Engine. Ernest H. Gaze, London, England.
437,793. Process of Hardening Steel. Byron M. Pickett, New York, N. Y., Assignor to the New Process Steel Hardening Company, Portland, Me.
437,794. Process of and Composition for Tempering. Byron M. Pickett, New York, N. Y., Assignor to the New Process Steel Hardening Company, Portland, Me.
437,795. Composition of Fluids for Tempering Steel. Byron M. Pickett, New York, N. Y., Assignor to the New Process Steel Hardening Company, Portland, Me.
437,806. Valve. Edward H. Weatherhead, Cleveland, O.
437,810. Hoisting Machine. James Boyd, St. Paul, Minn.
437,828. Friction Clutch. Samuel Widdowson and Thomas H. Widdowson, Delevan, Wis.
437,840. Hammer Die for Drill Forging Machines. Claus Van Haagen, Chester, Pa., Assignor to the Chester Twist Drill and Tool Company, same place.
437,841. Machine for Forging Drills or Reamers. Claus Van Haagen, Chester, Pa., Assignor to the Chester Twist Drill and Tool Company, same place.
437,842. Die for Forging Drills or Reamers. Claus Van Haagen, Chester, Pa., Assignor to the Chester Twist Drill and Tool Company, same place.
437,866. Metal Working Lathe. Walter J. Muncaster, Cumberland, Md., Assignor of one-half to Merwin McKaig, same place.
437,893. Rolling Mill. James Hunter, Pittsburg, Pa., Assignor to the Dilworth, Porter & Co., Limited, same place.
437,900. Car Coupling. Harlow F. Chapin, Brockport, N. Y.
437,908. Automatic Coupling Pipe for Steam Heating Systems for Railway Cars. Edmund Savage, Albany, N. Y.
437,922. Sand Blast Apparatus for Cleaning Stove Plate Castings. John H. Goodfellow, Troy, N. Y., Assignor of two-thirds to Hiram G. Hammett and E. Smith Strait, both of same place.
437,928. Valve Gear for Steam Engines. Charles W. Hunt, West New Brighton, Assignor to the C. W. Hunt Company, New York, N. Y.
437,955. Cable Railroad and Conduit. Reynolds T. White, Boston, Mass.
437,691. Trolley. Isaac F. Baker, Lynn, Mass., Assignor to the Thomson-Houston Electric Company, of Connecticut.
437,962. Car Coupling. Charles O. Barnes and Lucien Barnes, Sr., Syracuse, N. Y.
437,969. Apparatus for Vaporizing and Burning Hydrocarbon Oils. Douglas Bradshaw, Rockport, and James M. Ashley, Boonville, Ind.
437,970. Machine for Rolling Metal Plates and Bars. Gustav Brisker, Konigshutte, Germany.
437,974, 437,976. Railroad Crossing. George R. Campbell, Bucyrus, O.
437,977. Railway Frog. George R. Campbell, Bucyrus, O.
438,005. Automatic Smoke Consumer. Gotthold Langer, Trenton, Mo., Assignor of one-half to Henry F. Hoffman, same place.
438,014. Drilling Machine. Benjamin G. Luther, Worcester, Mass., Assignor to Albert F. Prentice and Vernon F. Prentice, same place.
438,024. Car Coupling. Samuel B Sadler, James R. Sadler and David M. Carter, Fairfield, N. C.
438,027. Drilling Machine. James H. Smith, Belleville, Ill.
438,034. Engine. Le Roy Tobey, Penn Yan, N. Y., Assignor to himself and George S. Sheppard, same place.
438,038. Air Brake. William H. Walker, Martinez, Ga., Assignor of one-half to Patrick J. Sullivan, Augusta, Ga., and Edward Everett, Wilmington, N. C.
438,057. Boiler. Joseph Bromich, Topeka, Kan.
438,070. Suspension Bridge. Daniel M. Eddy, Pueblo, Colo.
438,071. Apparatus for Making Gas from Oil and Steam. Edwin R. Ellsworth, Brooklyn, N. Y.
438,072. Mode of Making Compound Metal Tubes. George H. Everson, Pittsburg, Pa.
438,085. Valve Gear. Frank S. McKibben, Joseph, Ore.
438,088. Car Coupling Link. Jacob Strickler, Chicago, Ill.

PERSONAL.

Ex-Sheriff Lewis, of Jessup, Luzerne county, will succeed Mr. Lawall as manager of the New York, Susquehanna & Western Coal Company.

Mr. Raphael Pumpelly, C. R. Van Heise and H. L. Smythe, geologists, are at the present time taking observations on the Aticokan iron range, Minnesota.

Colonel S. T. Curtis, it is reported, is going to Virginia, City, Nev., to take charge of the Keyes mine, which is said to have passed into the hands of a new syndicate.

Mr. E. Burgess has been elected president of the Tiger Silver Mining and Milling Company, which proposes to operate the old Tiger mine, in the Bradahaw mountains, Arizona.

Mr. Thomas D. Davis, superintendent of the Patterson Coal Company at Mt. Carmel, Pa., formerly division superintendent of the Luzerne district of the Delaware and Lackawanna, has resigned and accepted his old position.

Prof. James F. Mace, metallurgist, reached Denver, Colo., on the 3d inst. en route to Omaha. He is returning from the La Plata Mountains, and reports great activity in the mines at that point. He intends to organize a company to build a smelter above Durango.

The Faculty of the Dakota School of Mines at Rapid City, S. D., will this year consist of the following members: Samuel Cushman, dean of Faculty; Geo. D. Hitchcock, professor of chemistry; R. A. Goor, professor of modern languages, and Mrs. D. G. Haynie, modern languages.

Mr. H. S. Jacoby has been chosen assistant professor in the College of Civil Engineering in Cornell University, Ithaca, N.Y., and will have charge of the department of graphics and bridge engineering. Professor Jacoby has been for some time assistant to Professor Merriman in Lehigh University.

The Knights of Labor and the National Progressive Union of the coke region were amalgamated on the 26th ult., as the result of a conference held at Scottdale, Pa. The coke region organizations will hereafter be designated as District 4, United Mine Workers. The actions of the Columbus convention were endorsed.

The Count de Paris, in an interview with a reporter of one of the city papers, stated that he intended to visit the labor centers, especially the mining, steel and iron center of Pennsylvania, for the purpose of studying the methods of living of the intelligent American workmen. He intends especially to visit Bessemer and study the rise of that town as built by Andrew Carnegie. That he would use the knowledge thus acquired in ameliorating the condition of the French laborers.

Mr. W. H. Patton, for many years was prominently identified with the Comstock Mining Companies of Nevada, now general manager of the Broken Hill Proprietary mines in Australia, has been in San Francisco for four months in very bad health, and will soon leave for the East to obtain proper medical treatment. Mr. Patton, it is stated, receives a salary of $30,000 a year, and has been granted $1,000 per month on a two-years' leave of absence besides.

INDUSTRIAL NOTES.

The Edward P. Allis Company, of Milwaukee, Wis., has a contract to make nine engines of 1,000 horse power each to furnish the power in operating the West End Street Railway of Boston.

The Henderson Steel and Manufacturing Company, of Birmingham, Ala., has increased its capital stock $100,000, will enlarge its works and erect two 10-ton iron furnaces and blooming train.

The Columbia Steet Car Company, organized about three months ago with a capital of $1,000,000, it is reported, has purchased grounds in the western portion of Chicago, Ill., and expect to begin building operations at an early day.

The rolling mill department of the United States Rolling Stock Company at Anniston, Ala., has completed a piece of shafting 25 feet long, 7½ inches in diameter, and weighs 3,640 pounds. It was to be used in the works at Anniston.

The Falcon Iron and Nail Company, of Niles, O., will commence at once to build six new puddling furnaces at its Russia mill. The company is now building three new ones in the Falcon mill. There will also be four built at the old mill in the near future.

The Midvale Steel Company, of Philadelphia, Pa., is to erect a new casting shop, 135 × 285 feet. There will be two wings, each 50 feet long. In the main building there will be a 50-ton traveling crane. The building is to be constructed entirely of iron.

The American Malleable Iron Company, a new corporation with a capital of $500,000, has purchased a tract of nearly 17 acres, in Chicago, Ill., immediately south of Ninety-third street, and east from Drexel avenue, costing $3,000 per acre, upon which a plant will be erected.

Negotiations for the sale of the Morgan Iron Works and Roach shipbuilding yards, it is stated, have been brought to a successful end, and that a company of English and American capitalists, with a capital of £350,000, had been formed for the purpose of carrying on the business.

The Ingersoll-Sergeant Rock Drill Company, of New York, shipped last week, a large plant of mining machinery, comprising air compressors, rock drills, etc., to the Jehu mines in China. Mr. Jonas Crabtree, an experienced mechanical engineer, was engaged by the Ingersoll-Sergeant Company, and is now on his way to China to erect and operate this machinery.

A Western syndicate, it is said, through a representative, has inspected all the sea-green slate quarries between West Pawlet and Castleton, Vt., and has negotiated for all the property but two quarries, whose owners have agreed to join the combination. The syndicate is said to be backed by English capital, and it will endeavor to control the entire sea-green slate product of the world.

The Gates Iron Works, of Chicago, Ill., are making extensive improvements in their plant. On the lot adjoining the old works on the south they have built a large shop, 68×150 feet. There are three traveling cranes, each running the full length of the building. The center crane is 22 feet high, and those on the sides are each 19 feet. The center trolley is intended to handle machines built weighing from 40,000 to 80,000 pounds each.

The furnace at Lenhardtsville, Pa., which has been out of blast for many months, during which time it has been increased to twice its former capacity, will resume this week. The Reading Iron Company is also getting the Norway furnace, at Bechtelsville, Pa., in readiness for resumption in a few weeks. On the first of November Col. Joseph Pott's large charcoal furnace at Isabella, one of the oldest furnaces in the State, will resume after receiving a thorough overhauling. Idle furnaces at Lebanon are also preparing to resume.

The Lackawanna Iron and Coal Company at Scranton, Pa., is arranging to perfect extensive improvements at its rolling mill during the winter in the shape of a new blooming and billeting train, which will be constructed so as to be used in the manufacture of steel rails by rolling, and also four-inch billets of steel, which are used in making wire and rods. A large blower house will be constructed for additional blowers, and two melting cupolas will be erected.

The Georgia-Alabama Investment & Development Company, incorporated under the laws of Alabama, issues a prospectus which places the capital stock at $4,500,000. Its property includes 8,000 city lots in Tallapoosa. 2,458 acres of mineral land, the Tallapoosa Iron Furnace, the Piedmont Glass Works and the capital stock of a railroad to connect Tallapoosa and Stevenson, a distance of 120 miles. All these properties are said to be free from indebtedness, with the exception of a $40,000 mortgage on the furnace. General Benjamin F. Butler is president of the company.

The Chester Rolling Mill Company, of Thurlow, Delaware county, Pa., has changed its name to the Wellman Iron and Steel Company, and increased its capital stock from $600,000 to $1,000,000. The management has undergone a change in the retirement of Samuel A. Crozer, Jr., and C. B. Houston. The new president is S. T. Wellman, who was superintendent of the Otis Steel Company, of Cleveland, prior to the sale of that concern to English capitalists. The new capital is to be used in extending the works.

The upper yards of the Dupont Powder Company, located on the Brandywine, near Wilmington, Del., blew up on the afternoon of the 7th inst. The first explosion took place in one of the packing mills where a workman was soldering tin over wooden boxes of hexagonal powder, for the purpose of making them air tight. Instantly the packing mill exploded, followed by an explosion of the other mills in the yard, seven or eight in number. Ten people were killed and twenty were wounded. The loss was $1,000,000. The works exploded were only a small part of the company's plant.

A Philadelphia dispatch of Oct. 8 contains the following information: The big throat of the iron furnace at Edge Hill, operated by the Crane Iron Company, of Catasauqua, Pa., is choked up with a lump of solid iron 10 feet thick. Last Saturday afternoon the "bell" broke down, and as it was impossible to keep the blast of hot air playing upon the molten mass of metal in the furnace, it began to chill. As much of this iron as possible was run off, but when about 10 feet were left in, it had cooled too much to be drawn. There was also in the stack about 25 feet of "stock," or ore, but that can be picked out. It will have to be blasted.

The capacity of the rolling mill of the Portage Iron Company, limited, at Duncansville, Blair county, Pa., has been enlarged by the addition of 17 more puddling furnaces and another train of rolls. The works now contain 37 single puddling furnaces, 6 heating furnaces and 6 trains of rolls. The nail-plate train has been taken out and a 20-inch muck train and a 7-inch hoop train put in. The company is now prepared to make cotton ties, as well as bar, band, hoop, scroll and angle iron and steel. Cut-nail making has been given up. The additions to the equipment of the mill increase its capacity from 8,000 to 21,000 net tons of finished iron and steel annually.

The Stilwell & Bierce Mfg. Co., of Dayton, O., advise us that it has brought suit in the United States Court against the S. N. Brown Co., who is using a Hoppes live steam purifier. The Stilwell & Bierce Mfg. Co. claim that in using this purifier they are directly infringing the Stilwell purifier patents owned by it. This company own all the Stilwell patents for heating and purifying feed water for steam boilers and manufacture the well-known Stilwell exhaust heater and the Stilwell live steam purifier. Having been engaged in this business for a good many years, they claim to be the oldest house in this country in this line of business.

The business heretofore conducted by the Taylor Gas Producer Company, of Philadelphia, Pa., was transferred on October 1st to Messrs. R. D. Wood & Co., of that city. W. J. Taylor, the President of the Taylor Gas Producer Company, and the inventor of the producer, although not giving his whole time to it, as formerly, will retain his interest in its success, and will give it the benefit of his long experience in metallurgy and the use of gas. The sale of the Taylor producers, and the application of producer gas to industrial operations, will be carried on by R. D. Wood & Co., and will be in charge of W. H. Blauvelt, formerly engineer of the Taylor Gas Producer Company.

On October 4 the tunnel of the Niagara Falls Power Company, sub-leased by the Cataract Construction Company to Rogers & Clemens, this city (see ENGINEERING AND MINING JOURNAL, September 20), was started. The first sod was removed by President Gaskill with a nickle shovel. The shafts will be three in number, 10 × 20 feet and 100 feet deep, and will be sunk simultaneously. One will be located near the mouth of the tunnel, one near the corner of Erie and Third streets and the other nearly opposite the old Erie Depot. An international convention has been in session for some time in London, England. Of this commission Sir William Thompson is president, Professor Coleman Sellers represents America, Professor Marscart, France, and Theodore Tourit, Switzerland. The commission is to decide the best and most economical method of utilizing the power of Niagara as developed by the Construction Company, and a large prize has been offered for the best plan presented.

At an adjourned meeting of the creditors of the Worcester Steel Works, held at Boston, Mass., on the 6th inst., the investigating committee made its report. The committee found the indebtedness to be $641,313, of which $55,000 is secured. The total book assets are $147,947. The committee say that the property is of such a nature that it must be handled in a judicious manner in order to realize anything like what ought to be received from the sales of the plant. The expert appraisers says that for operating purposes the plant and machinery are well worth $940,000, but to be sold out piecemeal they would not realize more than $283,000, or, if at auction, not more than $188,700. The committee recommended that President George M. Rice and the company either make an assignment or be put into insolvency. It is reported that one creditor said he had been informed that the works had made an assignment on the 6th inst., and asked Mr. Rice if it was true. Mr. Rice said an assignment had been recorded at Worcester to A. D. H. Bell and William Lorne, of Boston. It was voted to investigate Mr. Rice's personal assets, with a view to requesting a personal assignment.

MACHINERY AND SUPPLIES WANTED AT HOM AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

1,084. Illustrated catalogues and price lists of manufacturers of charcoal retorts whereby a by-

product is made, such as alcohol and acetate of lime. Louisiana.

1,085. Rails, cars and all other necessary equipment for a street railway three miles long. South Carolina.

1,086. Names of firms that are manufacturing vitrified paving bricks somewhere near a stream or sea coast from where they could be shipped to Florida. Florida.

1,087. A full line of machinery for manufacturing wagons and buggies. Alabama.

1,088. Iron roofing and siding for planing mill. Tennessee.

1,089. A first class modern engine from 350 to 400 H. P. Ohio.

1,090. A lath machine, bolter, and cut-off saw. Tennessee.

1,091. Machinery for separating sand from kaolin, other than by water process. Georgia.

1,092. Three or four miles of 25 or 30-pound teel rails in good shape for relaying. Arkansas.

1096. A portable 25 H. P. engine and 35 H. P. boiler. North Carolina.

1097. Dry clay brick machine. North Carolina.

1098. Two 10 and two 20-ton power traveling cranes, 48 feet 2 inches span, center to center of rails; boring mill, large lathes and other tools for boiler and machine shop. Also hot air heating arrangement for same. Virginia.

1099. A good second-hand 7 or 8-foot boring mill. Georgia.

1100. Catalogues and full particulars of steam syphons and pulsometers. Georgia.

1101. Machinery for reducing flint to an impalpable powder at the rate of 400 pounds an hour, and so separate it from the coarser material, leaving the machine impalpably fine in a body by itself. Illinois.

1102. Broom excelsior, ax handles, spoke and hub machinery. Mississippi.

1103. Woodworking machinery for planing mill and sash factory. Florida.

1,105. Felt and asbestos covering for steam pipe. Pennsylvania.

1,106. A core drill, either hand or power; prefer second-hand drill, but it must be in good order. North Carolina.

1,107. Pulley patterns of different sizes; also tumbling barrel for cleaning castings, new or second-hand. Maryland.

1,108. Machinery for a spoke factory. Alabama.

1,109. Boiler tube cleaners, for 20-inch boiler flues for use in rolling mill. Pennsylvania.

1,110. Improved chair machinery. Georgia.

1,111. Engine from 50 to 75 H. P.. Corliss action; also boiler for excelsior cutting machines. Georgia.

AMERICAN GOODS WANTED ABROAD.

1,093. Complete plant for smelting works of about 50 tons capacity per 24 hours, for silver and copper ore, to be packed in small sections, convenient for mule-back transportation. Peru.

1,094. Hickory pick handles. England.

1,095. Clothes pins, broom handles and shoe pegs. England.

1104. A prominent commission merchant of Hayti wishes to open business relations with manufacturers of cordage of all kinds (rope, cotton lines and cotton trot), wicks for all kinds of candles, spirit for night lamps, copper faucets for pipes, sail cloth for vessels, oakum for vessels, carpeting (tapissiere) or lining for lining or carpeting houses, strong mucilage packed in small bottles, rosin and carpenters' tools of all kinds. Hayti.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including October 1st were as follows:

		Tons. 1890.	Tons. 1889.
Marquette, Marquette District		1,091,517	1,142,339
St. Ignace,	"	15,911	39,445
Gladstone, Marquette District		6,183	770,340
" Menominee	"	54,139	.....
Escanaba, Marquette	"	1,013,055	35,297
" Menominee	"	1,587,995	1,294,387
" Gogebic	"	235,592	215,650
Ashland,	" "	1,746,151	1,258,218
Two Harbors' Vermillion District		739,092	690,823
Total, tons		6,480,638	5,361,440

ALASKA.

A bill providing for the exploration of Alaska Territory has been placed on the calendar of the House of Representatives. The bill, as reported from the Committee on Military Affairs, provides for stationing and maintaining a detail from the army in the heart of that territory for a sufficient term of years, for the purpose of exploring the resources of that section, and appropriates $100,000 for the payment of expenses. Its passage is urged by Western miners, who hold the firm belief that Alaska is rich in mineral wealth, and who wish to use the military establishment as the base of operations.

Professors J. C. Russell and M. B. Kerr of the U. S. Geological Survey have reached the States from Alaska, where they have been making a survey of the territory. Prof. Russell extended his geological studies from the terminal moraine to the heads of all the principal glaciers flanking Mount St. Elias and the adjacent range. A large glacier in Disenchantment bay, heretofore unexplored, was explored; accurate measurements were taken and its rate of motion determined. At elevations of 4,500 feet Prof. Russell discovered fossil plants and mussels. Professor Kerr's observations developed two facts of great interest to the geological world: First, the absolute certainty that Mount St. Elias is in United States territory; second, that its height and that of all other peaks in the vicinity has been overestimated. Instead of 19,500 feet, according to past observers, Kerr's estimate lowers Mount St. Elias to less than 15,000 feet, and other peaks proportionately.

ARIZONA.

(From our Special Correspondent.)

SAN FRANCISCO, Sept. 22.

The placer fields near Gila City, along the Colorado river, are to be extensively worked during the fall and coming winter. Several companies have purchased extensive plants, and next month work will be inaugurated.

The mineral resources of Arizona have been retarded in their developement by the Alien Act which has prohibited the investment of foreign capital in the territories, but despite this drawback a large amount of work is being done. The sale of the Tiger mine is reported from Prescott, and after the great property is pumped dry work will be inaugurated in a vigorous and systematic way.

CONGRESS MINING COMPANY.—An additional 20 stamps are being made to the mill at this mine; a new steam hoist has been put in and will be ready for operation on October 1st.

COCHISE COUNTY.

Within a comparatively short distance of Tombstone there has been discovered an extensive deposit of $5 free milling ore, in a neighborhood where wood and water are easy of access. While the deposit is said to be of immense extent, the point exercising the minds of the local magnates is whether it can be worked at a profit or not.

YAVAPAI COUNTY.

An English syndicate is now working on Lynch Creek, six miles from Prescott. It is said that a $250,000 dam is being built to operate placer deposits. After being used for mining the water will be turned into Lonesome Valley for agricultural purposes.

CALIFORNIA.

(From our Special Correspondent.)

AMADOR COUNTY.

SAN FRANCISCO, Oct. 4.

KENNEDY.—This mine was listed on the San Francisco Stock Board at the time the charges were reduced. It is becoming one of the best bullion producers. The ore body is large, and is of good quality, and the outlook at present is so promising that a dividend of 5 cents per share was declared by the company this week.

CALAVERAS COUNTY.

A discovery of platinum has been made on Geyser Mountain, and San Francisco capitalists propose to develop the prospect. Platinum has been lately quoted at $20 per ounce, which is about 120 per cent. advance on ruling quotations at the close of 1889. This rapid increase in price is tending to stimulate the production of the metal here.

TULLOCK & LANE.—The addition of five stamps has been made to this mill at Angel's camp. The equipment now consists of 10 stamps. The mill is now crushing 30 tons of rock every 24 hours, and working 20 tons of sulphurets every 30 days.

FRESNO COUNTY.

MINARET.—This group of mines located in the northeastern corner of the county were originally exploited for gold and silver, but is now appreciated for the less precious metal. One of the Minaret group, known as the "Bull of the Woods," has been surveyed by a United States mineral surveyor and patented. This is a monster mine, being in reality a mountain of iron of a high grade, with slight traces only of sulphur, silica or other refractory or objectionable matter.

MONTEREY COUNTY.

CARMELO.—A large body of men are engaged at this coal mine putting up hoisting works. It is estimated that there is in sight about $40,000 worth of coal. When the mine is in full operation about 150 tons of coal will be put at tide water per day.

NEVADA COUNTY.

AUBURN, Oct. 4.

IDAHO MINING COMPANY.—In sinking the shaft below the No. 17 level of this mine, at Grass Valley, quartz was found showing well in free gold, ranging from $80 to $100 per ton. This find is not connected with the regular pay shute, being hundreds of feet away. The ore is different from the heavily sulphureted ore discovered in the same vicinity some months ago.

NORTH STAR.—Sinking at this mine has been finished. The station has been cut and drifting commenced. Two drifts are to be run—one southeast, the other west. This prospect has been believed in by the Sutter Creek people through good and evil report, and within the next few months it will be definitely settled whether their good opinion was justified.

N. O. W.—A clean up of 60 tons of ore from this mine, located at Grass Valley, yielded last week $50 per ton, and 10 tons of sulphurets shipped to Denver made a return of $300 per ton. As this showing was better than was anticipated congratulations were in order.

PLACER COUNTY.

A whole group of claims in the vicinity of Wisconsin Hill, comprising the North Star, Horman, Byrne & Irish, Dolly Varden, Insolvent and Schmitt mines, has recently been bonded by Mr. John Hobson. It is said that an expert will soon be on the ground to examine the properties for an English syndicate.

DRUMMOND.—This old mine is likely to become a bullion producer once more. Rock is being taken from the old stopes of a most encouraging character. These stopes are extensive and the vein large. No. 2 tunnel, now in between 500 and 600 feet, will afford new backs of virgin ore on a strong vein so rich in places as to show free gold. This tunnel has just been connected by a winze 500 feet from its mouth with tunnel No. 1, which will facilitate working of both, and afford excellent ventilation. A shaft is being sunk about 800 feet from tunnel No. 2, on what is known as the Hobson tunnel. This shaft shows a four foot vein, also of excellent ore.

ECLIPSE.—This mine was recently shut down, and it is very uncertain when they will start up again.

FOREST HILL DIVIDE.—The principal gold mines of Placer County are situated on this Divide, between the north and middle forks of the American River. This divide is a remnant of an old plateau deeply cut into by precipitous, cañons and gulches. The old tortiary river channels, usually deeply covered with an andesific breccia, are here, as a rule extremely rich, and have been mined for many years with varying success. Curiously enough, the quartz mines in the district are few. Most of them are of a pockety character, often carrying coarse gold.

GREY EAGLE.—The owners of this property commenced in 1888 to prospect their ground. A drift is being run from the shaft in search of a rich channel which is supposed to pass through their holdings. The rich channel north of Forest Hill was tapped by a tunnel. It has been mined for a considerable distance north and south of said tunnel. The mine is now under the management of Mr. Harold Powers, formerly of the Sunny South mine. No doubt a large amount of gold has been taken out; on the other hand, the expenses attending to such a large undertaking have been very large. In due time the company will come out ahead. Not long ago a suit was commenced against the company involving the title to some of its ground.

HATHAWAY.—The mill on this property was shut down a short time ago. However, active work is going on in the mine, and the mill will be running again before long.

HOGSBACK.—A company controlling this property, and under the management of Mr. C. Hoffman, is trying to find the continuation of the Red Point channel. Two tunnels have been driven, the first one proving too high. The work of exploration is still going on, and there is a strong probability that the company will be well rewarded.

KIRKLAND.—Active work is being carried on at this mine, which is the east extension of the Hathaway. The superintendent in charge is sinking on the lead with three shifts, and expects to reach 2 0 or 250 feet before stoping. At present he is down 75 feet. The ore out of the shaft equals the best of the Hathaway.

LINN-PIONEER.—Two years ago this mine, located near Damascus, was sold to J. Fair, of San Francisco. A great deal of work had been done, and a 20-stamp mill was in the course of erection at the time of the purchase. It appears that the ore-body which had been relied upon as the mainstay of the mine was soon worked out; and the mill was found to be rather large for the mine. Recently, however, it is said that the mine has again been put on a dividend-paying basis.

MORNING STAR.—This drift mine, located at Iowa Hill, is running steadily and producing well. The principal owners are the Coleman Brothers, of Grass Valley, and John Hokon, of Iowa Hill.

MUIR TUNNEL COMPANY.—The channels north of Michigan Bluffs have been but partly prospected. Some time ago the holders of the principal claims located in this region, among others, Wm. Muir and Ed. Polifka, consolidated their properties. The intention was to run a large tunnel starting from a point southwest of the town. Until now, however, nothing has been done. A meeting of the stockholders was held in San Francisco a few days ago, and it is to be hoped that some results will follow. That the channels in this vicinity are very rich is proved by the successful operation of the Weske Tunnel at Turkey Hill a few years ago. The tunnel on this property was too high, and inclines in the mine had to be resorted to.

PARAGON.—The champion mine of the divide is known under this name, or the Breese and Wheeler Mine, of Bath. For many years this drift mine, located on what probably is the same channel as the Mayflower has been a steady and strong producer. It is by no means exhausted yet

VAN VACTOR.—A 5-stamp mill was recently put up on this mine. The property is situated at Canada Hill, at an elevation of about 5,000 feet. A run is now being made to test the ore. It is low grade but there are considerable quantities of it.

WATERHOUSE AND DORN.—The claim known as the Horman mine at Wisconsin Hill, probably the continuation of the Morning Star channel, was sold last year to Messrs. Waterhouse and Dorn of San Francisco, for $50,000. A small force of men are now working there.

SAN DIEGO COUNTY.

JULIAN MINING COMPANY.—This company, it is said, will erect $100,000 worth of machinery at the mine, which it recently purchased. It is joined on the west by the Cincinnati Belle, on the east by the Hidden Treasure, and is in the immediate vicinity of the Stonewall mine.

SISKIYOU COUNTY.

The gravel mines of Jillson & Co. are located about three miles from Hornbrook. The character of the gravel in the lead upon which these mines are located is similar in many respects to the famous blue gravel lead in Sierra, Butte, Plumas and other counties. It is even asserted that it is a continuation of the blue gravel channel of the counties named, being the bed of an ancient river that traversed this region in prehistoric times. On the discovery of the deposit the owners fitted up a hydraulic plant that cost about $20,000. The location enjoys the advantage of a 350-foot pressure and a dump of over 200 feet into the Klamath river. The gravel channel is about 1,200 feet in width, and the ground that has been worked is said to have shown the remarkable production of 33 cents to the cubic yard. The owners have taken out $15,000 in gold this season.

COLORADO.

FORT PITT MINING AND MILLING COMPANY.—This company has been organized with a capital stock of $500,000. The company is a Pennsylvania organization with J. E. Ridall at the head of it, and has purchased the Oneida lode, the Rustler lode and mill site, and the Maximum lode and mill site.

CLEAR CREEK COUNTY.

SEVEN THIRTY.—Recent discoveries of ore in the east workings of this mine have brought a number of new parties to work under lease on various blocks of ground in a part of the mine hitherto unexplored. The new ore chute has been opened for a length of 300 feet and it is reported that various levels show it to extend 280 feet in height. This ore body is probably the upward extension of that already disclosed and now being worked in the 140 and 80 foot levels. The last shipment from the 475 level west aggregated a value of $3,735.48 in silver and lead.

LAKE COUNTY.

LUCKY JOE MINING COMPANY.—This company has completed arrangements for the development of the southern slope of Rock Hill. A shaft house, 80 × 25 feet, has just been finished. This plant has a capacity of prospecting the territory owned by the company. The workings of the Crown Point shaft of the Nisi Prius company are about 150 feet deeper than the lowest level of the Lucky Joe working shaft, so that the water of that region is nearly all drained by the pumping plant already on the Crown Point. The working shaft of the Lucky Joe is now 205 feet deep, and it is expected that the contact will be struck at the depth of 250 feet, from which point levels will be run to intersect the ore chutes trending through the Lucky Joe and Emily, one of the company's properties.

SILVER CORD MINING COMPANY.—The management of this company is working a few men in the "A. P. Willard," near the Sellers line. At another point in the Attawa a small force is taking out sulphide sand ore, that has the appearance of broken off concentrates, so fine is it. Prospecting is being done by the company up in the contact below the Gross shaft, and some 80 feet above the incline. The openings are in the limestone about 80 feet.

PARK COUNTY.

LONDON.—This mine is keeping up its record as a producer. The London mill is working day and night; 20 stamps are dropping on ore that will not pay to ship direct from the mine to Denver. The stamps are supplied by automatic feeders from the crusher. Loaded cars of ore that are trammed from the mine are brought down semi-weekly to the mill. From a run of 60 hours, 52 ounces of amalgam were taken from the plates. Preparations will be made to ditch the water from Mosquito creek to keep the mill supplied during the winter.

PITKIN COUNTY.

ASPEN MINING AND SMELTING COMPANY.—The deep shaft of the Aspen mine is down 700 feet, and is in a blue lime formation, which shows that the contact is not far distant. It is said that this shaft will demonstrate that deep mining in Colorado is practicable. The developments in the mine during the past few weeks have been most important. Heretofore the ore has all been found over the third level; it is now known that there are immense bodies of mineral in the lower part of the property. A chimney has been developed north of the electric incline, which is 500 feet south of the shaft. At the third level this chimney was a body of medium-grade ore in the hanging-wall. At the fourth it was of similar character, but at the sixth it was rich, there being streaks of stephanite that run up into the thousands. The chimney is 25 feet wide at the sixth, but its thickness between walls is not known. The average of the mineral is over 100 ounces. About 200 feet south of the incline the fourth and fifth levels have developed a large body of ore of good grade, and the sixth is just coming into it. This chute is either a continuation of the main chute turning down through the lower territory, or is a branch; but at any rate it rivals the old ore bodies in size and gives new value to the mine. A new motor is being put in over the incline; the old one, of 10 H. P., will be left in position, the new one being set back of it, being too light to do the work that is now in prospect. The new hoister is 25 H. P., and it will lift all the ore that can be gotten out of the mine.

SADDLE ROCK.—This mine is shipping about 10 tons of ore a day. It is located on the Castle creek side of Aspen mountain, near the western edge of Tourtelotte Park. It is on a new ore zone. The ore in the Saddle Rock comes from a depth of 600 feet. The shaft is 450 feet deep. A level from the bottom runs east into the mountain. A winze is sunk 90 feet from the drift into the ore body.

SAN MIGUEL COUNTY.

SAN MIGUEL GOLD PLACER COMPANY.—The officers of this company started from Boston in a special car on Friday, October 9th, for Denver. From this point they will go by way of the Rio Grande Southern railroad, which has recently been completed, direct to Placerville for the purpose of inspecting the company's gold placers, located on the San Miguel river. The party consists of Gen. Benj. F. Butler, president; Hon. James Gillilfillen, treasurer; Frank R. Sherwin, and a number of prominent stockholders. Important improvements in the company's plant are outlined.

SMUGGLER MINING AND MILLING COMPANY.—The work of widening the tunnel in this company's mine has been completed and ore is now being brought out from the lower levels. Shipments continue from the surface workings. The mine is producing from 1,600 to 1,700 tons a month. The ore is of a good grade. The tunnel was widened from two and one-half feet width in the roof to four feet top and bottom.

FLORIDA.

It is said that the Standard Oil Company has secured options on a large amount of phosphate deposits in Florida till November 23d.

GEORGIA.

(From our Special Correspondent.)

BIBB COUNTY.

CARLING GRANITE COMPANY.—J. H. Hertz, T. H. Carling and H. R. Brown, of Macon, have applied for incorporation under the title of the above mentioned company, with a capital stock of $50,000, and the privilege of increasing it to $100,000. The purpose is to open quarries near Macon and Sparta.

FANNIN COUNTY.

LOVINGOOD.—It is stated that this gold mine has been purchased by Atlanta parties, among whom are J. D. Caldon, D. G. Wiley, R. D. Mann and others. This property, we are informed, was worked before the war with good results.

FLOYD COUNTY.

The 80-ton charcoal furnace at Rome is nearly completed and will go into blast by December 1st. It is a first-class furnace, embracing all the modern improvements in the way of machinery, etc. The company has and will expend $300,000 on its construction an equipment.

UPSON COUNTY.

GEORGIA GEM AND MINING COMPANY.—This company has recently been organized with offices at Thomaston and Barnesville. The officers are Joseph A. Cotton, president; J. J. Rogers, secretary and treasurer, and R. G. Mathews, financial agent. The company owns 100 acres of mining lands near Thomaston, which are said to have been prospected with good results.

KANSAS.

CHEROKEE COUNTY.

A special report shows that during the week ending October 4th the output of ore from the mining districts of Galena and Empire City was: Rough ore, pounds milled, 1,764,830; zinc ore, pounds sold, 765,000; lead ore, pounds sold, 300,000. Sales aggregated a total value of $17,333, and the total value of the output was $21,000.

MARYLAND.

(From our Special Correspondent.)

FREDERICK COUNTY.

FREDERICK CITY MANUFACTURING AND DEVELOPMENT COMPANY.—This company has been organized with a capital stock of $1,000,000, for the general purpose of developing the resources of Frederick City and its vicinity. Negotiations are already in progress for securing an iron foundry and other enterprises. The officers are Col. Frail, President; C. W. Ross, Vice-President; and D. C. Winebrener, Secretary.

MICHIGAN.

COPPER.

ALLOUEZ MINING COMPANY.—In a recent interview with John Stanton, secretary and treasurer of this company, the we learn that the burning of No. 1 shaft house delayed production through that shaft but two weeks. The building has been reconstructed and the mine is now in full operation. The engine of this shaft, although exposed to the heat, was but little damaged, for the reason that those in charge were careful not to allow water to strike it while in a heated condition. Concerning the search which is being made for the Calumet conglomerate bed, Mr. Stanton received a report last week from Mr. Fred Smith, superintendent of the mine, stating that a shaft had been sunk 30 feet through gravel and quicksand, and 10 feet into the trap rock. From the character of this rock it was decided that the opening had been made in the foot wall. A week ago a drift was started west in search of the conglomerate. It is impossible to state at just what point this will be reached, but the distance is estimated to be between 30 and 40 feet.

The September product was 102 tons of mineral against 115 tons for August and 126 tons in July, making 606 tons for the season.

ATLANTIC MINING COMPANY.—Concerning this company, Mr. Stanton said that the new balance skip-hoist, manufactured by the M. C. Bullock Manufacturing Company, had been in operation some time and gave the best of satisfaction. The drum is of a peculiar pattern, being constructed of two conical sections joined on the end of their longest diameter. The break band runs over the junction. The size is 21 feet in the center and 12 feet on each end. The engines, two in number, are of the Corliss pattern, 22 × 60 inches. At present the plant is temporarily operating the balance cage system in No. 3 and 4 shafts, located about 800 feet apart. The new shaft which has been sunk alongside of No. 3 shaft for the purpose of furnishing a part of this balance hoist, in connection with No. 3, has been holed, but owing to lack of timbermen has not been completed.

The mine produced 213 tons of mineral in September, against 219 tons in August and 193 tons in September last year. The production for nine months has been 1,847 tons, against 1,920 tons in 1889, a decrease of 73 tons.

CALUMET & HECLA MINING COMPANY.—The September product was 3,664 tons of mineral, against 3,537 tons in August and 3,127 tons in September, 1889. This makes 30,715 tons produced since January 1st, against 20,084 tons last year, an increase of 10,631 tons.

It is stated that the new pumping engine Michigan will not go into service until some time in 1891.

The output for the week ending Monday, October 6th, was 884 tons.

CENTRAL MINING COMPANY.—Concerning this company Mr. Stanton states that the mine is looking much better. The drift which is being driven west to the northwest vein is in a distance between 1,400 and 1,500 feet. From 100 to 150 feet of ground remain unbroken. It is expected that the vein will be cut some time this year.

The September output was 83 tons 1,680 pounds.

FRANKLIN MINING COMPANY.—The September product was 265 tons, against 265 tons for August, and 203½ tons for September a year ago. This makes 2,020 tons produced thus far this year, against 1,741 tons in 1889, an increase of 279 tons.

IROQUOIS COPPER COMPANY.—The official announcement of the listing by the Boston Stock Exchange of this company contains these facts: The property consists of 553·78 acres of land north of the Kearsarge mine. The stock is assessable. The company was incorporated April 8, 1886, under the general laws of the State of Michigan, for mining copper. The capital is $1,000,000, in 40,000 shares, par value of which is $25. Assets and liabilities August 1st, 1890, were as follows:

ASSETS.

Cash on hand		$45,268.76
250 shares Hancock & Calumet Railroad stock at $100		25,000.00
Bills receivable at Boston		35,485.00
		$105,753.76

LIABILITIES.

Due at mine June 30th	$52.06	
Due at Boston to date	16.67	
		68.73
Balance assets August 1st		$105,685.03

The property lies between the Kearsarge and the Allouez mines. It is said to be fathered by the Clark-Bigelow people.

KEARSARGE MINING COMPANY.—The mineral output for September was 71 tons.

OSCEOLA CONSOLIDATED MINING COMPANY.—After this week, four stamp heads will be at work on Osceola rock. A fifth head is soon to be erected. Rock is now being hoisted from the new or Opechee shaft. The lode in No. 4 shaft has been cut through at the twenty-fourth level and is found to be fifteen feet wide; all of it is said to be very good. The September product was 241 tons, against 220 tons in the same month last year.

PENINSULA MINING COMPANY.—The September product was 60 tons against 45 tons in August and 52 tons in July, a total of 554 tons since January 1st.

QUINCY MINING COMPANY.—The September product of this mine was 450 tons of mineral against 451 tons for August and 325¼ tons for September last year. This makes 3,647 tons produced since January 1st, against 2,513 tons in 1889, an increase of 1,134 tons.

TECUMSEH MINING COMPANY.—The exploring shaft which is being sunk in the Kearsarge amygdaloid by this company is down to bed rock. This was a difficult pit to sink, as it passed through about 40 feet of sand and gravel. Search will not be instituted for the lode. The property lies on the mineral range, directly south of the Osceola mine. The work is in charge of Johnston Vivian, superintendent of the Centennial and Franklin Mining Companies.

MISSOURI.

JASPER COUNTY.

(From our Special Correspondent.)

JOPLIN, Oct. 6.

The exceptionally heavy rainfall of the past week has retracted the mining interests in this district, as many mines were completely drowned out. The sales of ore, however, were quite large, with the ruling price for zinc ore at $23.50 to $24 per ton. Lead ore is still advancing, and the week closed at $32.50 per thousand offered for lead. Following are the sale from the different camps: Joplin mines, 1,384,280 pounds zinc ore and 178,880 lead; value $21,504.

Webb City mines, 1,052,740 pounds zinc ore and 59,590 lead; value $13,718.44.

Carterville mines, 1,613,490 pounds zinc ore and 78,800 lead; value $20,377.32.

Zincite mines, 317,570 pounds zinc ore and 4,800 lead; value, $3,804.

Oronogo mines, 160,000 pounds zinc ore; value, $1,840.

Carthage mines, 1,076,940 pounds zinc ore and 9,000 lead; value, $4,031.

Galena, Kan., mines, 974,140 pounds zinc ore and 300,000 lead; value, $17,333. All districts, total value, $82,607.76.

Miners are all striving to make big turnings of lead at $32.50 per thousand.

The old Par Hill mines on the Oswego land will soon be working. Mr. Samuel C. Cook, the manager, is putting in two large pumps. This was a part of the Bonanza diggings in the early days of mining in this district.

Your correspondent has had the privilege of examining the old records, and finds that one mining lot only 200 feet square has produced from one shaft, only 70 feet in depth, $22,000 worth of zinc ore in eleven months. This lot was only worked down to water level, and now, with proper drainage, may produce as largely as in the early days.

The Little Nugget is still keeping up its regular output, and last week sold 10,650 pounds zinc ore. The Little Nugget property is a regularly organized stock company, and has been a favorite stock on the call at the Kansas City Mining Exchange.

A number of mines on the Empire Company's land were shut down last week on account of the heavy flow of surface water. Shaft No. 31, on the Mahaska land, is opening up a good body of ore. This land is a steady producer of lead and zinc ore under the management of Rice & James.

The most important and largest deal of the year was closed last week by the Center Creek Mining Company, of Webb City, purchasing from the Webb heirs 160 acres of land for $315,000. This tract of land has been operated under lease by the Center Creek Company for a number of years, and has certainly proved a bonanza to both the Webb estate and the Center Creek Company. General Noble's mines at Oronogo are putting in a heavy force pump. General Noble has unbounded faith in the future of the lead and zinc mines of this district.

The Standard Lead and Zinc Company, of Belville, are putting in a new heavy pump; they also have 20 tons of zinc ore in their bins on account of the scarcity of cars for shipment.

The Holden mines are improving every week and are producing a larger amount of ore.

The National Bank of Joplin opened its doors to the public October 1st, and am informed by the cashier, Mr. A. H. Waite, that their deposits the first day amounted to over $50,000.

FAUROT MINING COMPANY.—This company is operating a mine east of the Interstate Company, and is putting in some new machinery.

GRECHEN MINING COMPANY.—This company, located in East Hollow, has shut down for about three weeks in order to put in some heavy machinery.

HOLDEN.—These mines, under the management of Mr. Lee Holden, are now in good working order and are making large outputs.

OSWEGO MINING COMPANY.—This company is doing quite an amount of prospecting. It has opened up some large bodies of lead and zinc ore. A 60 horse power boiler to furnish steam for operating the direct acting steam pump of the mine is being put in place.

STANDARD.—Holibaugh & Stealey, mining and civil engineers, have just completed an underground survey of this property located at Belville. The plat shows over 700 lineal feet of drifts, all of which connect with the shafts, large stopes. One of these stopes is being carried forward with a face 50 feet in height. Several large pillars of ore have been left as support for the roof. This property keeps up a steady production of 40 to 90 tons of zinc ore per week. The surface improvements are very good and consist of large steam concentrating plant and hoisting machinery.

JACKSON COUNTY.

(From Our Special Correspondent.)

KANSAS CITY, Sept. 27.

Your correspondent in a recent visit to Kansas City Mining Exchange, found that it was doing a good business. It seems to be growing daily in favor with Kansas capitalists and investers. Good mining stocks were looked upon as comparatively a safe investment. The board of directors and listing committee have used every precaution in order to avoid wild-cat schemes and worthless stocks.

Mr. Churde, secretary of the Exchange, has formulated a plan of establishing a reliable mining bureau in connection with the Exchange. He proposes to collect all obtainable mining data from the lead and zinc mines of southwest Missouri and southeastern Kansas. This he will compile and publish once a month. The date will be obtained from special agents appointed in each mining district. Mr. Churde informs us that the enterprise is fully endorsed by the board of directors and members of the Exchange. We hope that the enterprise will meet with the approval of every mine management in Missouri and Kansas.

MONTANA.

DEER LODGE COUNTY.

(From our Special Correspondent.)

ST. LOUIS, October 8.

A rumor has spread that the American Investment Company, of London, was about to buy up the Granite Mountain mine, of Montana, and that it held an option on the property for 90 days. We say rumor, because nothing officially can be had on the matter. At the office of the company every one is ignorant (?) of the affair, and when your correspondent called Secretary Field politely referred him to the papers as the best source of information. It is understood that Mr. L. M. Rumsey, one of the largest stockholders in the company, has charge of the deal. Although nothing definite can be learned, the particulars appear to be as follows: Mr. Underwood, the representative of the English syndicate, has had a conference with the chief shareholders of the mine, and has been given an option of 90 days on their shares of stock. The price to be paid is $55 per share for the first 55,000 shares, and then the remainder in small lots, ranging in price from $55 to $81. It is understood that Mr. Underwood has made these arrangements and gone East to settle up the affair with his syndicate. How much truth there is in the story is unknown, as nothing can be learned from the company, and the brokers are at variance in their opinion on the subject.

Mr. John Blessing, of Gaylord, Blessing & Co., puts little faith in the rumor. In speaking of it, he said that, in his opinion, it was a stock job affair. "Business men, such as are the stockholders of this mine, are not likely to transact business in that style, giving an option free to a syndicate on their property. Why, I would take an option on the property at $60 a share if it were given to me. I believe the rumor has been spread to create a demand for the stock, which for the past month or two has been perfectly dead on the market. Some stockholders wish to sell out, and at a fancy price. My opinion is that there is nothing in it."

Mr. Joe J. Mullally was firmly persuaded that the transaction was *bona fide*. "I don't think," he said, "that the Granite Mountain people would enter into or entertain any such deal, or give rise to any such rumor were there not something in it. As I understand it, the property is to be bought upon a sliding scale of prices. The first 55,000 shares being bought by January 1st, 1891, at $55, and afterward different lots at higher prices. Of course no stockholder is obliged to sell out, only those who wish to. It is entirely an individual transaction and not one of the company."

Mr. James Campbell said that no option had as yet been given, but that the American Investment Company was eager to obtain one.

It is the intention of the company to issue a circular on the subject to the shareholders within the next few days; at least so a broker told me.

Owing to the rumor, Granite Mountain has shot up in price and is quoted at $4 above last week's quotations.

LION MINING COMPANY.—This company filed its first annual report and statement September 15th. The amount of capital stock is $800,000 in shares of $2 each. The station pump has been lowered to the 300-foot level. Stoping is in progress on the ore exposures on the south vein, and it is believed the main vein lies parallel and will soon be exposed. Cross-cutting continues and a drift will soon be started under the mountain. The officers of the company are: James H. Mills, president; James McMasters, treasurer; George Miller, secretary and general manager. Conrad Kohrs, Eli Holland and W. Coleman are the trustees.

MEAGHER COUNTY.

ONTARIO GOLD AND SILVER MINING COMPANY.—This company has filed articles of incorporation with the Secretary of State. The incorporators are Charles B. Savre, Arthur E. Fuller, Harry D. Patterson, Edwin J. Barker, Carter Barker and Ben D. Gardner. The capital stock is $5,000,000. The principal office is at White Sulphur Springs.

PARK COUNTY.

COOKE PLACER MINING COMPANY.—This company, incorporated recently by Jacob Mannheimer, Hiler H. Horton, Walter Dickerman, Perry A. Sharpe, R. W. Cavenaugh, A. Messer, M. W. Fitzgerald, of St. Paul, and R. E. Cutler, of Cooke City, with a capital stock of $320,000. The principal operations will be carried on in Park county, with the principal office at St. Paul, Minn.

SILVER BOW COUNTY.

BUTTE CONSOLIDATED MINING AND REDUCTION COMPANY.—This is the name of a new organization which is to develop and operate the Hesperus, Maud S., Lizzie, Moonlight, and Blue Jay silver mines on the eastern confines of Butte. It is said that the company will do business on a large scale.

EMMA NEVADA.—Development work on this mine continues with good results. Regular shipments of high grade ore are being made to Butte. The foot-wall, after which the workmen have been searching, was found about two weeks ago, deeply stained with copper. The vein carrying the chloride of silver resting upon it assayed $113.68 in silver and 6 per cent. copper per ton. The Emma Nevada is situated about three miles from the Anaconda Company's Camp Creek properties, the veins of which run parallel with those of the Nevada. The directors, it is understood, are figuring on sinking the shaft of the property to a greater depth. They believe that the silver and copper ore chutes will merge into one large vein of silver and copper rock at a depth of 100 feet.

ORO FINO SILVER MINING COMPANY.—This company recently levied an assessment of one cent per share. The funds are to be used in extending development work. The company's property embraces the Sunday and True Racket leads. A working shaft on the Racket lead has been sunk to the depth of 200 feet, from which a level runs west on the ledge 320 feet, entering the Sunday lead. A drift will be extended 75 feet further and a crosscut run to the foot wall.

NEVADA.

ESMERALDA COUNTY.

HOLMES MINING COMPANY.—This company of Candelaria is reported to be milling silver ore worth $25, with average chlorination of 88 per cent. Candelaria is situated in a region where water and fuel are scarce and natural facilities limited for working ore.

EUREKA COUNTY.

The enhanced value of silver has served to quicken into new life many of the decaying camps in Nevada, California and the adjacent States. In the Eureka District work is being prosecuted so vigorously that last week there was shipped to the Eureka reduction works 460 tons of ore from mines in the vicinity, and 200 tons were shipped to Salt Lake City smelters.

EUREKA CONSOLIDATED MINING COMPANY.—This company, it is understood, will hereafter reduce ores at as low rates as are charged at Salt Lake, thereby saving the producers the cost of transportation. The company has also raised the rate of wages in its mine from $3 to $3.50 per day. Both furnaces are running. A shipment of lead valued at $10,000 was received in San Francisco on the 22d ult.

MILLIONAIRE.—This mine, located west of Mill City, is attracting some attention, and if developments prove satisfactory it will pass into the hands of Californian capitalists who will carry on operations on a more extensive scale.

INGO COUNTY.

CONSOLIDATED STATE LINE MINING COMPANY.—Two hundred thousand shares of the capital stock of this notorious company were sold at public auction at San Francisco on the 19th inst. There were three bidders at the auction, and the stock was knocked down to Washington Berry for $250. For this insignificant amount Mr. Berry obtains control of the corporation, the total stock of which is 300,000 shares. The mine is located about 115 miles southwest of Candelaria, being but a short distance from the California State line. It has never paid. Ten years ago it was floated on the New York market for $3,000,000. About a year ago it was tried on the English market, but no one would touch it. A few months ago it was bonded in San Francisco for $150,000, and $10,000 was paid on account of the bond. The investor was about to put up more of his shekels, when, at the advice of a friend, he sent an expert to examine the mine. The expert reported that it was worthless. The best piece of property owned by the company is a mill costing about $15,000.

TUSCARORA DISTRICT.

The various mines are showing up well, and it is reported that one or two will figure on the dividend-paying list in the near future. A corporation has just organized for the purpose of running the Union Mill, which has recently been working only Commonwealth ore. The directors of the mill company have a controlling interest in the Commonwealth, North Belle Isle and Nevada Queen mines, each of which corporations will hold

a third interest in the newly organized company. The mill will start up under the new order of things on October 1st, when the rate for milling will be $25 per ton. The North Belle Isle has about $100,000 worth of ore and ore concentrates on hand at present, awaiting facilities for working.

NEW MEXICO.

GRANT COUNTY.

LAST CHANCE MINING COMPANY.—The 20-stamp mill now at Lake Valley has been purchased by this company. It will be removed to the company's mine. This mill, it is said, was put up at Lake Valley at an expense of $125,000, about eight years ago, and was in complete working order before the management discovered that its ore had to be smelted.

SANTA FE COUNTY.

SANTA FE COPPER COMPANY.—The directors have decided to erect 100-ton concentrating works. It is said that they have received a proposition from an American concern to put up a concentrator without cost to the company, unless it wishes to buy, which it will be privileged to do later. Whether the directors will avail themselves of this offer or buy the works outright with money to be advanced by themselves may be determined next week, when the outside proposition will be presented in detail.

NORTH CAROLINA.

(From our Special Correspondent.)

MORGANTON LAND AND IMPROVEMENT COMPANY.—This company recently purchased a tract of land comprising 70,480 acres, lying in McDowell, Mitchell and Yancey counties, which seems to be giving it trouble. The land is a part of an old grant upon which a large number of settlers have located. The attorneys of the company say that it is not the intention to contest the title of actual residents, and that the company will give quit claim deeds to all such, but that the fight will be over the possession of several large bodies of timber lands.

CABARRAS COUNTY.

ALLISON.—Some very good ore has been struck on this property and it is being worked by J. Simpson and others for the owner, W. R. Allison. The returns are very creditable for the force of hands at work, being at the present rate about $1,000 per month, which leaves a large margin of profit for all parties concerned. It is understood that the property will be thoroughly developed with a view to larger operations.

CHATHAM COUNTY.

EGYPT.—This coal property is now being opened up on a moderate scale, and in a way that bids fair to insure its success. It is located about midway between Greensboro and Fayetteville, and is connected with the Cape Fear & Yadkin Valley Railroad by rail. Deep River runs within a few hundred yards of it. The shaft is 500 feet deep; from the bottom of which the main tunnel extends to the eastward for a quarter of a mile, branching into smaller tunnels running north and south. The bed or vein varies from a few inches to five feet in thickness. It is underlaid by a vein of black band iron ore, which in turn rests on a second, veinlet of coal. There are about 30 men employed, raising from 40 to 60 tons of coal per day. The president of the company operating the mine is Mr. Samuel A. Henzley.

DAVIDSON COUNTY.

NORTH CAROLINA SMELTING WORKS.—This is the present name of the old Piedmont Reduction Works (as was recently noted in the ENGINEERING AND MINING JOURNAL); to all appearances it seems as if this company is to meet with a much deserved success. As is well known, its object is primarily to treat the zinc and lead silver-bearing ores of the Silver Valley Mine, situated about 10 miles from the works at Thomasville. A great deal of money has been spent in investigation and research for a process which will successfully treat this ore. The works have been running for several weeks, and a considerable quantity of base bullion produced. The company is prepared to purchase all auriferous and argentiferous sulphurets forwarded to it.

SILVER VALLEY.—On the 6th of August development work resumed in this mine in consequence of the success of the reduction works at Thomasville. At the present time everything is in good order and the ore is being hauled to the works. The outlook for the future is brighter than it has been for a long time, as the Thomasville, Silver Valley & Pee Dee Railroad, the survey of which has just been completed, will pass through the mining property, and will furnish means of transportation. During the latter part of August a body of carbonate of lead was struck. It is considered a good indication.

GASTON COUNTY.

CATAWBA.—Manager Horton has just completed the developments at this mine pending the starting of the machinery. During the latter part of September the first week's run was made; it made a very creditable showing. The friends of this famous mine are confident of a long run on the ore that has been recently opened up, which, it is believed, will eclipse the former record. There is, undoubtedly, a large supply of hard ore carrying sulphurets that will and should be treated on a large scale in the future, and upon which the mine will be eventually forced to rely; but at the present there is a large body of high grade brown ore (see the ENGINEERING AND MINING JOURNAL, of May 24th, 1890) that is being milled.

OHIO.

In reply to a question by Chief Inspector of Mines Haseltine, of the State of Ohio, Attorney General Watson has decided that it is unlawful for mine operators to place a boiler used for generating steam, or a hopper or other inflammable structure for the preparation or dumping of coal, nearer than 60 feet to the mouth of a shaft.

PENNSYLVANIA.

A charter was granted at the State department in Harrisburg on the 29th ult. to the Chambersburg and Gettysburg Railroad Company, capital $200,000. The line will be ten miles and a half long, from a point on the Mount Alto Railroad to the Wolf Hill ore mines in Adams county.

COAL.

A dispatch from Wilkesbarre, dated October 4th, takes the following optimistic view of the situation in that region: The coal trade in this valley is improving and those standing close to the various companies operating in the section say the coming winter will be one of unexampled activity in mining circles. Extensive repairs are being made in the Murray and Stanton shafts of the Lehigh & Wilkesbarre Coal Company, and as soon as they are put in working order they will start on full time, giving employment to 1,500 men and boys. Orders are pouring in, and if the present demand continues the miners may reasonably expect steady work until next spring.

LEHIGH & WILKESBARRE COAL COMPANY.—The new breaker for the Washington colliery of this company, at Plymouth, is now being supplied with machinery. The Red Ash vein is quite extensive at this mine, and the managers are opening up the very lowest levels. It is stated the colliery will be able to produce 1,500 tons per day when complete.

IRON.

BITTENBENDER.—The Warwick Iron Company, of Pottstown, has sold its lease of this iron mine, at Siesholtzville, Berks County, to Dr. H. K. Hartzell, of Allentown, together with all the machinery of the same, on private terms. This mine has been leased by the Warwick Company since 1872, and probably 200,000 to 300,000 tons of magnetic ore have been taken therefrom to supply the furnaces at Pottstown. The transfer took place on October 1. Doctor Hartzell was connected with Mr. Thomas A. Edison, the inventor, in the works of the New Jersey Concentrating Company, near Bechtelsville, Berks County, where experiments were made for some time in separating ore by the Edison electric process machinery.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to October 3d, were as follows:

	1890. Gals.	1889. Gals.
From Boston	2,126,620	3,543,901
Philadelphia	124,739,244	117,172,910
Baltimore	9,176,410	5,748,611
Perth Amboy	12,079,038	13,847,575
New York	339,829,705	344,783,643
Total	487,951,017	485,096,640

SOUTH CAROLINA.

(From our Special Correspondent.)

It is of interest to note the source of revenue to the State of South Carolina from its phosphate mines. The royalty of $1 per ton for the rock removed on navigable streams for the year just ended amounts to $237,150. This mining was begun 18 years ago, and for eight years it was looked after by the State, the revenue averaging $65,958 per annum. It was then turned over to the Department of Agriculture and has since been under that management. The average income has been $1,825,000 for the entire period.

CHESTERFIELD COUNTY.

CHESTERFIELD MINING AND IMPROVEMENT COMPANY.—C. L. Evans, W. F. Stevenson, and G. J. Redfearn have incorporated the above mentioned company for the sole purpose of developing and incorporating the Kirkley gold mine, of this county. The capital stock of the company is $50,000, in shares of $25 each, 20 per cent. of the subscription to be paid down. This mine is said to belong to the same group of mines as the Haile and Brewer, and its friends predict for it an equal future upon operation. How true this may be we cannot say, but it is in the same neighborhood. It was worked before the war, and since has not been reopened, owing, it is said, to a defective title which has recently been perfected. The mining tract comprises 300 acres, and the company have an option on 600 acres adjoining, which is mostly well timbered.

TENNESSEE.

(From our Special Correspondent.)

HAMBLEN COUNTY.

GROTTO LAND COMPANY.—A. A. Arthur, W. E. Scarritt, C. H. Allison, George Arthur and George A. Folsom have applied for a charter for this company. It is to have a capital stock of $1,000,000.

HAMILTON COUNTY.

A successful cast of basic steel was made on the 16th inst. at Chattanooga. The casting weighed 22 tons, and is said to be of superior soft low carbon, well adapted for structural work. Great importance is attached to this event, as it affords a market for the lowest grade of Southern iron. A second furnace will be put in operation within 30 days.

LAWRENCE COUNTY.

WEST POINT MINING AND MANUFACTURING COMPANY.—This company has been organized for the purpose of mining iron ore in the vicinity of West Point. The company has a capital stock of $40,000, and the following are the officers: W. A. Hudson, of Florence, Ala., president; A. J. McGarry, vice-president; Wade Allen, secretary.

UTAH.

Hon. Arthur Thomas, governor of the territory of Utah, in his annual report for 1889 to the Secretary of the Interior, gives the value of the territory's mineral output for the year as follows: Gold, $499,500; silver, $5,656,254; unrefined lead, $1,378,584; refined lead, $80,662; copper, $206,079.

SUMMIT COUNTY.

DALY MINING COMPANY.—The nine months' output of this company is 6,316·16 ounces of bullion, $380,065.24 in sulphides, and $97,096.85 in ore sales. The September output was $84,954.54 in sulphides, and $9,254.33 in ore sales. No product for March. The sulphides sold in June weighed 35,000 pounds. Sulphides not sold in August.

ONTARIO SILVER MINING COMPANY.—The product of this company for the first nine months of 1890 is 736,058·52 ounces of bullion and $500,958.63 in ore sold. The September output was 86,589·98 ounces of bullion and $78,101.23 ore sold.

VIRGINIA.

(From our Special Correspondent.)

CRAIG COUNTY.

JUNCTION CITY LAND AND IMPROVEMENT COMPANY.—This company, recently organized at New Castle with a capital stock of $250,000, proposes to erect an iron furnace and rolling mills. C. C. Lewis, Frank Woodman, J. S. McDonald and others are the interested parties, all of New Castle.

ORANGE COUNTY.

A stock company with a capital of $750,000, has been organized to develop and improve the lead and zinc mines of the Gordon mountain.

PAGE COUNTY.

LURAY MINING AND MINERAL COMPANY.—This company has been organized with a capital stock of $100,000, at Luray, for the purpose of developing a tract of 5,000 acres of manganese and iron lands recently purchased.

FOREIGN MINING NEWS.

CANADA.

PROVINCE OF NOVA SCOTIA.

(From our Special Correspondent.)

The St. Stephen's pyrities referred to previously show an analysis from 47-48 per cent. of sulphur, 2·74 to 3·61 per cent. of copper, traces of gold and silver, and about 100 ounces of nickel to the ton of ore, as assayed by analyst Best, of St. John.

COAL.

The Cowan mine, at Kemptville, is being reopened, and it is expected that the Brunswick mine, of Tangier, will also in its new hands show good results.

The Hondonderry Iron Company is preparing to put its second furnace in blast, and will shortly utilize its white ores.

The Steel Company, of New Glasgow, declared a ten per cent. dividend at its last annual meeting.

The English syndicate which recently acquired the Joggins mine in Cumberland county is reported to be in treaty for the railway connecting the mine with the Intercolonial Railway at Macan. The line, which is about eight miles long, runs parallel with the outcrops of the seams of the north edge of the basin, and will prove of value, as it connects with shipping facilities at the Joggins and River Hebert. The figure named is said to be $180,000.

In Pictou county the Messrs. Muir have had their mine connected by a short branch with the road of the Acadia Coal Company.

Recent heavy rains drowned the Salt Springs openings. Arrangements are being made to put in a larger and permanent pumping and hoisting plant.

Prospecting for coal has been commenced in Horton township, and so far the indications are promising.

Work continues brisk at all the mines, especially in Cape Breton, as the closing of the St. Lawrence navigation is coming within measurable distance.

GOLD.

Messrs. H. T. Harding, of Truro, and H. G. Hardy and W. R. Stockridge, of Boston, have applied for the incorporation of the Windsor Gold Company, Limited, with a capital of $100,000, to work gold mines at Rawdon, and other places in Nova Scotia and New Brunswick.

The Provincial Government is considering applications from several districts asking for aid to open up roads. Among others, one from the Lake

Catcha district, the point where Mr. Reid, of the Oxford Gold Mining Company, has added to his mill, and introduced a good compressed air drilling plant.

PROVINCE OF ONTARIO.

The Stock Exchange of Toronto has decided to form an association for the purpose of aiding in the development of Canadian mineral resources. At a meeting held for the purpose of organization it was decided to try and enlist the co-operation of prospectors by requesting them to forward samples to the rooms of the association for examination and analysis. One of the objects of the organization will be the dissemination of reliable information relative to the value of mineral properties which may be placed on the market. Messrs. C. S. Morris, A. B. Barry, Mr. Lockhart, Mr. Gordon, T. D. Ledyard and Mr. Lackie were appointed to prepare a constitution and to report at a meeting of the committee to be held on the 14th inst.

(For our Special Correspondent.)

PORT ARTHUR, Sept. 27, 1890.

There are three propositions before the public in this section for the erection and operation of blast furnaces and silver smelters at Port Arthur. The geographical situation of Port Arthur is such on the completion of the railways to the iron ranges, that both iron and silver could be profitably smelted here.

Lands 40 miles in length and covering most of the ground on both sides of the Aticokan river for that distance have been taken up this summer, and at the present writing explorers and surveyors are more numerous on the range than at any time this season. Members of the Geological Survey are at last beginning to realize that there is something in the country, and a party from that department is now on the range.

Joseph Beaudro and Alex. Gaugier discovered a strong quartz vein averaging 5 feet in width on the north shore of Clearwater bay, close to the Argyle mine, and about 20 miles from Rat Portage by the canoe route. Oliver Daunais surveyed and took up 480 acres on the vein for a half interest in the property. Some stripping was done on the vein, and for a distance of 250 feet it showed free gold in nuggets from the size of a pin's head to buckshot, regularly disseminated throughout the vein. Specimens taken from other parts of the vein, that did not show any gold and only a trace of pyrites, gave uniform assays of four ounces of gold to the ton of 2,000 pounds. No assays have been made, from any part of the vein, showing free gold. Development work will be commenced at an early date.

Oliver Daunais surveyed and took up 19 locations, on the Seine river iron range on the northeast shore of Rainy lake, near the mouth of the Seine river. The iron gives average assays of 61 per cent. metallic iron. This range is on the proposed route of the Ontario & Rainy River Railroad, which will be commenced next year.

BADGER SILVER MINING COMPANY.—Your correspondent has just returned from a tour of the mines. Through the courtesy of Superintendent Shear was shown through the different workings of this property. What was predicted in these columns in the early part of this summer, as to what the result of development work would be, has been amply verified, and it is safe to say that up to date the Badger shows a greater extent of developed ore bodies for the amount of work done than any other mine in the district. Semi-monthly shipments of smelting ore and concentrates have been made during the summer, and will be kept up without difficulty, as the amount of ground opened up and the extent and value of the different dumps is more than sufficient to keep the mill running night and day for the next year. The "West End" vein has developed into a perfect beauty, having an average width of 3½ feet between well-defined walls of black slate. The gangue is composed of calcite zinc blende, galena pyrites and black silver, averaging 150 ounces of silver to the ton of 2,000 pounds; the richest portion being along the bottom of the level, which appears to be driven over the top of a rich ore body. The breast of the level is now within a short distance of the intersection of No. 1 vein, at which point a shaft will be sunk, and drifting commenced on this vein. It is the intention to begin driving No. 1 level west on No. 1 vein. When work ceased at this point the vein was 5 feet wide in the breast of the level, and carrying about 40 ounces of silver to the ton. At No. 2 vein No. 1 level is being pushed on as fast as circumstances will allow. The vein is very compact and well defined in the breast of the level, the pay streak being 18 inches wide and carrying high grade ore averaging 1,800 ounces to the ton. A winze is being sunk 175 feet east from No. 1 shaft on No. 2 vein. The vein in the winze is carrying its width down and producing 100 ounces of ore. No. 1 adit level on No. 3 vein is now in a total distance of 225 feet and is in bonanza ore. The vein has come together and has a uniform width of three feet. The gangue is the same as at the "West End" and No. 2 veins. The ore from it is averaging from 1,425 to 2,140 ounces of silver to the ton.

No. 1 shaft on No. 4 vein is now down 120 feet; it has been in bonanza ore for the last 50 feet of this distance. On the 22d inst. a bunch of ore averaging 7,000 ounces to the ton was struck in the bottom of the shaft. The shaft is still in this rich bunch. No. 1 adit level is a total distance of 350 feet on the vein, and has been in bonanza ground for the last 90 feet. A band of witherite lies against the hanging wall. It is from 2 to 10 inches in width, and runs very high in black silver. This witherite or carbonate of baryta is so heavy that it is impossible to separate it from the concentrates. This fact accounts for the low value of $10,000 for the last carload of concentrates from the Badger. The ore from which it was obtained was taken out of No. 1 adit. A tram road is being built from No. 4 shaft to the mill. This will be used in transporting the ore, which is now hauled by carts. The mill has been enlarged, and a new dryer of larger capacity than the old one is being placed in position. Another shipment of two carloads will be made in a few days.

The drift is in ore which averages from 4.500 to 5,000 ounces of silver to the ton. It is now entering under that portion of the surface of the vein that gave average assays, for a distance of 150 feet, of 200 ounces to the ton. All the different workings are turning out good ore, and the record of the Badger this season has been a splendid one. The acquiring and paying for the Porcupine out of current production being equivalent to handsome dividends on the stock.

BEAVER MINING AND MILLING COMPANY.—Extensive improvements have been made in the mill. Four new vanners have been placed in position, three of which are the invention of the superintendent, and are doing excellent service in saving the fine silver from the slimes.

The water supply is being taken from the North Bluff and the mine. It is brought to the mill in launders, which have settling tanks at different points for purifying the water. It enters the mill from a large tank that has a capacity of 45 tons. This tank is located on a level with the battery of stamps, this arrangement obviating the necessity of pumping, and giving an ample supply of clean water for the boilers. Everything is in readiness for the erection of a second battery of stamps, which will be put up some time during the winter. The exhaust steam is run through pump logs throughout the mill, and acts both as a heater for the mill and dryer for the concentrates, in addition to the regular dryer, which has a capacity of about three tons. The mill is at present producing about five tons of concentrates daily.

Work is being prosecuted with all possible dispatch in the mine. The stopes are turning out some very high grade smelting ore; all the workings and the prospects of the mine are in A1 condition. The North Bluff vein is being opened up by means of adits and drifts, and is producing high grade milling ore. The Beaver continues to improve daily, and never appeared in as good a light as it does to-day. The more development work there is done the brighter the prospects appear. Captain Hooper is deserving of the highest praise for the manner in which the mine is managed. There are 30 tons of concentrates and smelting ore on hand, and will make a shipment about the 27th inst.

SHUNIAH WEACHU MINING COMPANY.—Captain Thompson is continuing the exploratory work on the new veins with the most satisfactory results. They show a uniform improvement in width and richness as depth is attained, and from their dip must cut the main vein at a slight depth below the chert, where it is expected that they will prove to be very rich in silver. No. 3 shaft is now down 700 feet, and is in good mill ore. The vein averages six feet in the bottom of the shaft. Sinking operations are being pushed as fast as possible in No. 4 shaft, out of which some very high grade smelting ore is being taken. There are ten barrels of smelting ore on hand, which are being added to very rapidly; a shipment will be made as soon as a carload can be completed.

SILVER ISLET CONSOLIDATED MINING AND LAND COMPANY.—Captain Trethewey is sinking on No. 2 vein on Edward's Island, which is a true "fissure,"-averaging 3½ to 4 feet in width. It crosses a series of horn blendic, porphyritic and trap dykes, each one of which it faults, and it has been traced across the island; a strong, well-defined outcropping shows on the north point of the island. The gangue of the vein in the shaft is composed chiefly of calcite, with some quartz and baryta, heavily mineralized with galena, blende, iron and copper pyrites and nickel. At a depth of 20 feet a seam of arsenical silver and nickel came in, and is continuing down as depth is attained. Selected samples assayed from 40 to 130 ounces of silver to the ton. The shaft is now down to the level of Lake Superior, and is making 30 barrels of water daily. The prospects are most encouraging.

A steam hoisting and pumping plant will be placed in position as soon as a shaft house and other necessary buildings can be erected. Capt. Trethaway starts in a few days with a force of miners for Cape Maivaase, to open up the company's copper property.

UNITED STATES BARYTA COMPANY, the property of which is situated on Kellar's Island, shipped per steamer Myles 1,000 tons of Baryta to Buffalo, N. Y., on the 26th inst. The company proposes to continue mining during the coming winter, and will no doubt have a large supply on hand on the opening of navigation in 1891.

ENGLAND.

An International Mining Exhibition is to be held at Frankfort in the course of next year. It is intended to devote a section entirely to electrical operations in mining.

MEXICO.

SONORA.

PROMONTORIO MINING COMPANY.—L. Ephraim, representing this company, is in Denver for the purpose of having $12,000 worth of ore sampled. The management has run a top tunnel 600 feet under the old workings of the Tumacacori mine, and has already crossed five veins of pay lead and silver ore. Work is actively prosecuted, and Mr. Ephraim expects to strike the mother vein with the tunnel in the next 100 feet. The ore is a high grade lead ore assaying, it is said, 40 per cent.

MEETINGS.

Crescent Mining Company, at McCornish & Co.'s Bank, Salt Lake City, Utah, October15th, at 10:30 A. M.

Consolidated California & Virginia Mining Company, at Room 58, No. 309 Montgomery street, San Francisco, Cal., October 13th, at 1 P. M.

Eureka Consolidated Mining Company, at Rooms 9 and 10. No. 306 Pine street, San Francisco, Cal., October 20th, at 10:30 A. M.

Exchequer Mining Company, at Room 79, No. 309 Montgomery street, San Francisco, Cal., October 20, at 1 P. M.

Inyo Marble Company, at No. 137 Montgomery street, San Francisco, Cal., October 29th, at 2 P. M.

Mayflower Gravel Mining Company, at Room 24, No. 328 Montgomery street, San Francisco, Cal., October 20th, at 1 P. M.

Silver West Consolidated Mining Company, at Room 37, No. 628 Montgomery street, San Francisco, Cal., October 21st, at 1:30 P. M.

Teresa Mining Company, at No. 328 Montgomery street, San Francisco, Cal., October 17th, at 8 P.M.

DIVIDENDS.

Aspen Mining and Smelting Company, dividend No. 17 of 10 (10) ten cents per share. $20,000, payable October 16th at the office of the company, No. 54 Wall street, New York City. Transfer books close October 10th and reopen October 17th.

May Mazeppa Mining and Milling Company, dividend No. 5, of one (1) per cent., $10,000, payable October 15th at the office of the company, Room 7, Patterson and Thomas Block, Denver, Colo. Transfer books close October 8th and reopen October 16th.

Silver Mining Company of Lake Valley, dividend No. 8 of five (5) per cent., $25,000, payable October 21st at the office of the company, No. 119 South Fourth street, Philadelphia, Pa. Transfer books close October 14th and reopen October 21st.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Alpha, Nev	5	Sept. 16	Oct. 22	Nov. 11	.25
Alta, Nev.....	39	Sept. 1	Oct. 7	Oct. 29	.50
Best & Belcher, Nev.....	47	Aug. 21	Sept. 25	Oct. 17	.25
Challenge, Nev	7	Sept. 26	Oct. 28	Nov. 17	.50
Goleta, Cal.....	1	Sept. 16	Oct. 27	Nov. 24	.10
Gould & Curry, Nev	65	Sept. 16	Oct. 21	Nov. 13	.30
Humboldt, Nev	1	Aug. 16	Sept. 29	Oct. 25	.01
Kentuck	22	Aug. 18	Sept. 22	Oct. 14	.30
Leigh Gravel, Cal..	1	Sept. 3	Oct. 13	Nov. 5	.25
Live Oak D. Gravel, Cal.....	12	Sept. 3	Oct. 9	Oct. 31	.05
Lockport, S. Dak....	6	Sept. 10	Oct. 10	Nov. 10	.002
Mono, Cal.....	30	Sept. 18	Oct. 28	Dec. 2	.25
North Peer, Ariz....	6	Oct. 1	Nov 5	Nov. 25	.05
Peerless.....	15	Aug. 14	Sept. 23	Oct. 14	.15
Silver King, Ariz....	4	Sept. 20	Oct. 28	Nov. 18	.30
Transit, S. Dak.....	2	Sept. 6	Oct. 8	Oct. 25	.001
Weldon, Nev.....	3	Sept. 3	Oct. 9	Oct. 30	.10

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Minneapolis, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 445 and 446.

NEW YORK, Friday Evening, Oct. 10.

An air of resignation is observable in the faces of mining stock brokers. They have about concluded that the present fit of depression is not a temporary guest, but rather that it has come to stay, not forever, it may be, but certainly on a more or less protracted visit. We miss the rosy-tinted predictions of our usually sanguine dealers. They do not speak as hopefully as of yore, and instead of confidently asserting that better times will come, they content themselves with shaking their heads dolefully, and wailing a pitiful "I don't know" when they are asked to venture a prophecy as to the probable state of the market a month or two hence. It is only once in a long time that brokers have not something encouraging to say of the situation. They believe that the market and the dead should be treated alike, and nothing but good be said of it. Hence the feeling before alluded to is indicative of a certain weariness caused by long waiting for the boom that, like the historic letter of the ballad, never came. In truth, "hope-deferred maketh the heart sick," and it is no won per that our dealers in mining shares are tired.

Still, we would counsel patience, for it is a long lane that knows no turning, and we doubt not that the Consolidated Stock and Petroleum Exchange will yet experience a period of prosperity; not, indeed, an extravagant rise in prices nor an enormous volume of business, but surely a very fair amount of trading and an increase in the price of those stocks which are at present selling at below their real value. The exact period at which this desirable revival will come depends altogether on the managers of the Exchange. It will not come until they have purified the lists and driven out the "cats" they are still nursing.

The week under review has been characterized by no special feature. The trading was light, and prices do not show much improvement. In our own market there was no marked demand for any one stock, but in the San Francisco market there seems to be a tendency toward a stiffening in values.

We note a sale of 100 shares of San Sebastian at 50c. The annual meeting of the San Sebastian Gold Mining Company was held on the 7th inst. The following officers were elected: President, G. W. Brown; vice-president, L. Dreier; treasurer, D. S. Steel; secretary, O. D. Blauvelt; trustees, G. W. Brown, D. S. Steel, L. Dreier, E. H. Cushman, C. Stewart, E. C. Wells, C. A. Doten, C. M. Ward and J. W. Hardley.

There seems to have been some demand for a few of the Colorado shares. Aspen Mining and Smelting Company, which had not been traded in for a long time, shows this week two transactions, aggregating 500 shares at $6.50 per share. Chrysolite was stationary at 30c., and 1,200 shares were disposed of. Dunkin had one sale at 60c. and Freeland, at 35c. and 36c., was traded in to the extent of 1,200 shares. Leadville Consolidated was in some demand at 15@17c., with 3,500 shares to its credit in the list of sales. Of Little Chief 1,100 shares at 40@45c. changed hands. Robinson Consolidated was quiet at 40c., and Silver Cord at the same price shows sales of 1,800 shares. Small Hopes was quiet at 95c., and Monitor had one transaction at 3c. Phœnix lead, which we do not remember to have seen on the sales list of the Exchange for several months past, shows one transaction this week at 14c.

Of the Utah stocks Horn Silver was dealt in to the extent of 2,030 shares at $3.25@$3.35. Ontario opened at $46.75, but declined to $45.25.

El Cristo was quiet at 75@80c. Rappahannock, as usual, was sold at 6c. Silver Hill, which had not been traded in for some time, shows a transaction at 40c. Silver King was sold at 15@17c.

Mutual Smelting and Mining Company was traded in to the extent of 1,300 shares at $1.25@$1.50. Phœnix of Arizona opened at 88c. and closed firm at 95c. Twelve thousand eight hundred shares of this stock were sold, which goes to prove that it is still a favorite

We note some sales of the copper stocks this week. Calumet & Hecla had a solitary transaction of 400 shares at $300, or $2.50 less than the price at which it was sold last week. Franklin, at $20, was traded in to the extent of 50 shares. Kearsarge had only one sale at $17.38, and Quincy another at $117.63. Huron was quiet at $5.50.

Of the Montana companies, Alice shows a solitary transaction at $2.

There has been considerable trading in California stocks this week, so far as the number of shares of different companies are concerned; 5,000 shares of Astoria, at 5@6c., were sold. Sutter Creek declined from $1.35 to $1.25, with reported sales of 11,000.

Bodie Consolidated had a transaction of 100 shares at $1.70. Mono was quiet at 70c. Standard was once more traded in and opened at $1, but at the close was sold at $1.35.

Plymouth still continues low, and 500 shares were sold this week at $2@$2.10. It is said that the developments in this property have not turned out as well as was expected, hence the decline in the price of this stock.

Quicksilver preferred, at $40@$40.50, was traded in to the extent of 200 shares.

Sales in Brunswick aggregated 30,100 shares at from 7c. to 9c.

Among the Black Hills stocks we note sales of Caledonia at $1.70@$1.75, aggregating 300 shares, and Homestake at $10@$10.75 shows transactions of 250 shares. No other Black Hills stocks were traded in.

Of the Comstocks, Consolidated California and Virginia advanced from $4.75@$4.95. Crown Point was stationary at $2.95, and Gould & Curry at $2.32. Ophir fluctuated between $5.13 and $5.50. Sierra Nevada was stationary at $3. Yellow Jacket shows one sale at $3.60. Alta was quiet at $1.70@1.75, and Barcelona at 25c. and 24c. was dealt in to the extent of 1,300 shares. Best & Belcher was quiet at $3.80@3.85. Chollar advanced during the week from $3.40 @$3.85. Julia opened at 35c. and closed at 40c., with sales of 1,200 shares reported. Mexican was in moderate demand at $3.45@$3.60. Occidental had one sale at $2.10. Potosi was quiet at $7@ $7.63. Scorpion had a sale at 40c. Union Consolidated was quiet at $3@$3.15, and Utah was dealt in to the extent of 1,600 shares at $1.15@$1.35. Both the old Sutro Tunnel and Comstock Tunnel were in some demand last week. One $1,000 Comstock Tunnel bond was sold at 22c., and 7,600 shares of Sutro Tunnel, at 11c.@12c., changed hands. The meeting of the Comstock Tunnel stockholders takes place on the 13th inst. The outcome of the meeting will be watched with considerable interest.

Boston. Oct. 9.

(From our Special Correspondent.)

The market for copper stocks the past week has shared in the general depression, and prices have found a lower level. At the same time there has been no great pressure to sell, from the fact that the belief is general that the decline is only temporary, and that later on renewed buying will advance prices. There has been but very little news from the mines, but such as has been received is of a favorable character. Early in the week there was a large order, said to be from the Lake, to buy Allouez, which advanced the price nearly a point, and it was suggested that good news must be forthcoming; but so far nothing of any importance has been developed, and the stock has declined in sympathy with the rest of the market.

Calumet & Hecla seems to have found its level at about $300. A few shares sold to-day at $303½. It is always difficult to fill an order on this stock, either to buy or sell, as the stock is closely held. Boston & Montana has been rather active, selling as high as $55¾, dividend on, and later at $51¾, ex-dividend.

Franklin has been heavy all the week and touched $19¾.

Centennial sold down to $20, a decline of $3 from the highest point of the week.

Osceola declined to $40, with a slight recovery to $40¼. The increased output of this mine ought to make the stock cheap at $40.

Atlantic sold at $20½, and Butte and Boston declined to $17.

Kearsarge has been very dull and inactive, with sales at $16.

Quincy seems to be on the bottom at $115; at that price it finds ready buyers.

Tamarack declined to $191, with later sales at $192. The reports from the mine indicate considerable progress on the vein, which is said to look better the deeper they go.

Arnold sold at $1½, National at $1⅝, Santa Fe at 55 cents.

Huron sold at $5, which is just the amount of the assessment. The delinquent stock is to be sold on Saturday next, and we look for better prices after that date.

Ridge advanced from 62½c. to $1¼. It looks a little like manipulation.

Copper Falls sold at $6, a decline of $5½ from last sale, July 22d.

Silver stocks are quiet, with a little more demand for Dunkin, which sold up to 70c. on the good showing of late in the mine and the expectation that dividends will be resumed at an early day.

Catalpa sold at 40c. and Crescent at 15c. Breece is wanted at 48@50c.

3 P. M.—Since the noon hour the market has been fairly steady, with the exception of Boston & Montana, which declined to $50½. Huron sold at $4¾@$4⅞, and Calumet at $300 for one share, while a lot of 26 shares sold at $303.

By Telegraph.—Boston & Montana, $51; Calumet & Hecla, $298.

Kansas City. Oct. 6.

Company.	Opening.	H.	L.	Closing.	Sales.
Argonaut	19†	....	....	....	.....
Bates-Hunter	45‡	....	....	45‡	.....
B'g Six	9	9	9	9	3,000
Brownlow	....	....	....	....	.....
Cash Gold	16	17½	16	17	4,100
Clay County	70‖†	70‖†	70‖†	70‖†	.....
Diamond B	5*	5*	5*	5*	7 500
Hard Money	10†	10†	9	9	700
Hunki Dori	12‖	12‖	9	12*‡	200
Iron Clad	9†	10‖†	9†	....	.....
Kansas City M. & M. Co.	2 62½	2 62½	2 62½	2 62½	100
Kansas City, Col	11‡	15*‡	11‡	15*‡	.....
King Jack	....	....	....	....	.....
Leavenworth	58‖†	58‖†	53‡	53‡	100
Little Nugget	1.25*†	....	....	....	.....
Little Rule	73½†	78†	73½†	....	.....
May Mazeppa	81*†	81*	81*†	81*	500
Minnequa Zinc M. Co.	10	11	10	11	2,200
Monte Cristo	3½	3½	....	....	.....
Morning Glim	44‡	....	....	....	.....
Pay Rock	....	....	....	....	.....
Pelican	30‡	....	....	....	.....
Potosi	8‖†	....	....	....	.....
Running Lode	19†	19†	16	16	1,100
Sylph	23‖†	....	....	....	.....

†Bid. ‡Asked. * Buyer 30. § Seller 30. §* Seller 60. ‖Buyer 60.

Denver. Oct. 6.

(From our Special Correspondent.)

The market for the past week has been fairly good, although prices have not been what was anticipated. The reports from the listed companies for the past month are looked for with considerable interest, and will most likely be more complete, and all details covered. The "Home for Miners" is receiving quite a number of liberal subscriptions from the generous-hearted brokers in stocks and cash, and when the proper time comes the shares should be put up at auction and sold to the highest bidder for the benefit of the Home. The members ought to select some special day for this purpose, advertise it, create an outside influenee, and raise a sum that would do them honor, and build the Home up to and including the second story. This is considered one of the most worthy objects ever projected in our State.

Prices and sales for the week ending Oct. 6th.

Company.	Opening.	H.	L.	Closing.	S.
Alleghany, Colo	12½b	*15	*15	12½	100
Amity, Colo	03b	03¼	02	02	3,500
Bangkok, C. B., Colo	08¾	09½	07¼	07¼	43,400
Bates-Hunter, Colo	47b	49	46	47	2,100
Brownlow, Colo	07½b	07½b	06½	05	600
Calliope, Colo	31b	32	30	30	700
Cash, Colo	14b	15	15	13	100
Clay County, Colo	61b	*70	59	67	15,500
Hard Money, Colo	03¼b	03¼	03¼	03	100
Leavenworth	55b	†59	52	54	5,700
Little Rule, Colo	70	76	71	76	15,600
Matchless, Colo	100b	200b	100b	200	.....
May-Mazeppa, Colo	80	*83	79	81	19,900
Mollie Gibson, Colo	30b	25b	25b	25	.....
Oro, Colo	160b	162b	50b	60	
Pay Rock, Colo	05	05½	05	05	12,700
Puzzler, Colo	10½	10½	07	07	1,700
Reed-National, Colo	70b	70	69	69	200
Running Lode	16¼b	19	17¼	19	600
Silver Cord, Colo	27b	31b	27b	32	.....
Whale, Colo	21½b	*22	*22	20	200
Prospects:					
Argonaut, Colo	27b	27b	18½	20	17,000
Aspen United, Colo	04½b	04¼b	03¾	*03½	1,100
Big Indian, Colo	11b	*12	10	10	2,700
Big Six, Colo	06¼b	06¼	05½	05½	2,800
Century, Colo	....	20b	10½b	....	.....
Claudia J. Colo	08	08	07½	07	1,200
Nat. G. & Oil Co	18	*19	16½	18½	3,200
Diamond B., Colo	03¾	04	02½	02½	6,200
Emmons, Colo	27½b	31b	28	31	700
Golden Treasure, Colo	23½b	2b	23	24	3,900
Ironclad, Colo	*14b	*14	09	08	600
John Jay, Colo	18½b	*18	10	15	2,400
Justice	11¾b	12	11	10¼	900
Legal Tender, Colo	03b	03	03	02½	1,700
Morning Glim, Colo	45b	46	45	46	900
Park Consolidated	23	23½	23	23½	1,500
Potosi, Colo	07¾b	08	07½	07½	2,300
Rialto, Colo	67	*73	59	59	27,300
Total for the week					189,100

*Buyer 30 days. †Buyer 60 days. ‡Seller 60 days. §Seller 30 days. a Asked. b Bid.

Lake Superior Iron and Gold Stocks.

(Special Report by David M. Ford, Houghton, Mich.)

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co	$25.00	$55.00	$60.00
Aurora Iron Co	25 00	7.50	8.50
Champion Iron Co	25 00	115 00	125.00
Chandler Iron Co	25.00	41.00	43.00
Chicago & Minn. Ore Co	100.00	116.00	120 00
Cleveland Iron Co	25.00	16.50	17.50
Germania	25.00	11.50	12.00
Jackson Iron Co	25 00	110.00	125.00
Lake Superior Iron Co	25 00	68.00	72.00
Milwaukee Iron Co	25.00	5.50	6.50
Minnesota Iron Co	100.00	84.50	86.00
Montreal Iron Co	25.00	9.00	10.00
Norrie (Metropolitan)	25.00	73.00	75.00
Odanah Iron Co	25.00	20.00	22.00
Pittsburg Lake Angeline Co	25.00	175.00	185.00
Republic Iron Co	25.00	41.50	42.50

GOLD MINING STOCKS.

Name of Company.	Par value.	Lowest.	High.
Gold Lake Mg. Co	....	....	....
Grayling Gold & Silver Co	$25.00	....	....
Michigan Gold Co	25.00	*$1.35	....
Peninsula Gold & Silver Co	25.00	....	.50
Ropes Gold & Silver Co	25.00	1.75	$2.00

* Assessment paid.

Salt Lake City. Oct. 4.

Company.	Opening.	Highest.	Lowest.	Closing.	Sales.
Alice, Mont	†2 55a	2 55 a	2.55 a	2.55 a	....
Alliance, Utah	2.40 b	2.50 b	2.40 b	2.50 b	....
Anchor, Utah	6 50 b	7.00 a	6.50 b	6.75 b	....
Apex, Utah	.16 b	.18 a	.16 b	.17 b	500
Barnes, Utah	.05 b	.07 a	.05 b	.05½ b	500
Cent.-Eureka, Ut.	40.00 a	40.00 a	31.00 b	39.00 a	....
Congo	12½ a	.12½ a	.12½ a	.12½ a	....
Crescent, Utah	.25 b	.28 a	.25 b	.28 a	....
Daly, Utah	23.50 a	23.75 a	23.50 a	23.75 a	....
Glencoe, Utah	1.15 a	1.15 a	1.00 b	1.05 a	500
Horn Silver, Utah	3.25 b	3.50 a	3.25 b	3.50 a	....
Malad Con., Id	.01 b	.03b	.01 b	.03 b	4,82?
Mammoth, Utah	3.00 b	3.75 a	3.00 b	3.75 a	....
Nabob	.05 b	.06 a	.05 b	.06 a	....
Northern Spy	3.00 b	3.00 a	3.00 a	3.00 a	....
Ontario, Utah	.....	.....	.....	.....	....
Stanley	.....	.....	.....	.....	....
Utah L. & C. Co.	8.00 b	9 00 a	8.00 b	8.50 b	....
Utah & Mont	.....	.....	.....	.....	....
Utah Oil Co., Utah	.06 b	.10 a	.06 b	.10 a	....
Woodside, Utah	3.25 b	3.25 b	3.25 b	3.25 b	....
Total					49,700

†Seller, 5 days. a Asked. b bid.

St. Louis.

(From our Special Correspondent.)

Prices and sales for the week ending Wednesday, Oct. 8, 1890.

Company.	Opening.	H.	L.	Closing.	Sales.
Adams	$1.90	1.95	....	1.90	.....
American & Nettie	1.00	1.05	....	1.02½	350
Bi-metallic	32.00	....	....	33.50	.....
Central Silver	.17½	.25	....	.21¼	20,700
Cleveland, Colo	.04¾	.06	.04½	.05	1,900
Cleveland, Idaho	.07	.11	....	.07	500
Gold King	.10	....	.09	.10	.....
Granite Mountain	44.25	....	44.00	48.00	300
La Union	.07	....	....	.08½	13,500
Little Albert	.33¾	....	....	.31¼	100
Mickey Breen	1.70	....	....	1.55	700
Maj. Budd	.06	.07½	....	.06¼	.....
Mountain Key	.47½	....	....	.46¾	.....
Montrose Placer	.58¾	....	....	.5?½	1,900
Pat Murphy	.13	.14½	....	.12½	3,000
Small Hopes	.90	.93¾	....	.92½	200
Silver Age	2.15	2.25	....	2.17½	200
Tourtelotte	.04	....	.02	.02½	2,800
West Granite	1.00	....	.98½	1.02½	.....
Yuma	.43¾	.48¾	.41¼	.43¾	2,000
Total					48,150

PIPE LINE CERTIFICATES.

(Specially reported by Messrs. WATSON & GIBSON.)

We can only note dullness and depression in the petroleum market. Weakness was especially marked in Ohio oil, which sold down as low as 19 cents per barrel. We can give no explanation of this great break, which leaves the market even now 20¾ cents a barrel, at half the price at which dealings were first started on the different exchanges two months ago. The price paid in the field by the Standard for Ohio oil is 35 cents. There is no speculation in certificates, but we highly recommend the purchase of Buckeye oil in the neighborhood of 20 cents, believing that the whirligig of speculation will bring it around to at least 30 before Christmas. We do not feel so confident of Pennsylvania oil, because the production there is moderately large, and the price three and one-half times the price of the Ohio article, and the intrinsic difference between the two is not as much as there is in the price of the two.

NEW YORK STOCK EXCHANGE.

		Opening.	Highest.	Lowest.	Closing.	Sales.
Oct.	4.....	78	78⅝	77⅞	78⅛	41,000
	6. . .	77¾	78⅜	77¾	78⅜	27,000
	7.....	78⅛	79	78⅛	79	10,000
	8.....	79¼	79½	79¼	79½	10,000
	9.....	79¾	80¼	79¾	80	16,000
	10.....	80¼	80¼	80	88¼	26,000
	Total sales in barrels....					130,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

		Opening.	Highest.	Lowest.	Closing.	Sales.
Oct.	4.....	79¾	80⅛	79¾	80	8,000
	6.....	79¾	79¾	78½	79¾	7,000
	7.....	80	80¼	79½	80	45,000
	8.....	80⅛	80½	80⅛	80¼	25, 00
	9.....	80⅜	82	80⅜	81¼	68,000
	10.....	81¼	81¼	80¼	80½	14,000
	Total sales in barrels.....					167,000

BUCKEYE PIPE LINE CERTIFICATES.

NEW YORK STOCK EXCHANGE.

		Opening.	Highest.	Lowest.	Closing.	Sales.
Oct.	4.....	*	....	....	....	.....
	6.....	*	....	....	....	.....
	7.....	25	25	24	24	10,000
	8.....	*	....	....	....	.....
	9.....	* ...	....	....	....	.....
	10.....	*	....	....	....	.....
	Total sales in barrels.....					10.000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

		Opening.	Highest.	Lowest.	Closing.	Sales.
Oct.	4.....	25	25	25	25	2,000
	6.....	*	....	....	....	.....
	7.....	23	23	20½	21½	29,000
	8.....	20	21	19	20¼	21,000
	9.....	20	21	20	20¼	19,000
	10.....	*	....	....	....	.....
	Total sales in barrels.....					71,000

* No sales.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, October 10.

Statistics.

STATEMENT of shipments of anthracite coal (approximated) for the week ending October 4th, 1890, compared with same period last year:

	Oct. 4, 1890.	Oct. 5, 1889.	Difference.	
Wyoming Region. Tons	440,806	428,339	Inc.	12,467
Lehigh Region .. "	138,058	138,965	Dec.	907
Schuylkill Region "	2 0,918	263,888	Dec.	2,970
Total..... Tons	839,782	831,192	Inc.	8,590
Total for year to date Tons.....	25,810,883	26,267,920	Dec.	456,337

PRODUCTION OF BITUMINOUS COAL for week ending October 4th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1890. Week.	1890. Year.	1889. Year.
Phila. & Erie R.R.....	2,597	102,299	59,105
Cumberland, Md.....	79,862	2,886,391	2,315,348
Barclay, Pa	*3,274	115,595	87,489
Broad Top, Pa.....	11,017	385,065	247,205
Clearfield, Pa.....	58,981	2,831,200	118,718
Allegheny, Pa.....	24,552	977,901	604,388
Beach Creek, Pa.....	34,072	1,414,739	1,145,298
Pocahontas Flat Top.....	32,696	1,433,262	1,293,474
Kanawha, W. Va.....	45,762	1,560,981	1,381,780
Total	292,813	11,707,433	7,252,814

* Estimated.

WESTERN SHIPMENTS.

Pittsburg, Pa.....	17,874	625,920	481,169
Westmoreland, Pa	13,030	868,734	1,121,612
Monongahela, Pa.....	13,550	394,097	304,515
Total	44,554	1,888,751	1,910,296
Grand Total.....	337.267	13,596,184	9,163,110

PRODUCTION OF COKE on line of Pennsylvania R. R for the week ending October 4th, and year from January 1st, in tons of 2,000 lbs.: Week, 108,580 tons; year 4,031,640 tons; to corresponding date in 1889, 3,297,957.

Anthracite.

At October prices what little business has been done has been slow during the week. Deliveries made are nearly all at early summer prices still, and August-September rates only prevail on small orders.

The sales agents met at Philadelphia on Thursday to compare notes on the situation, which, they agreed unanimously, was satisfactory. Under existing circumstances there is little fear of overproduction, as the comparative scarcity of labor, and the scarcity of cars and stiffness of freights will give the larger operators all they can do to produce their quota. The condition of affairs on the chief coal-carrying lines has improved very little since last week, as so many freight cars are locked up in the interior. Operators continue to complain that there has been little, if any, profit in mining and moving coal so far this year, owing to the low prices which have prevailed, and to the fact that freights are about 20 per cent. higher than formerly, when prices of coal ranged higher.

The liveliest feature of the past week's trade has been the demand for stove coal, which indicates activity in the retail yards and the commencement of the domestic consumers demand. This demand however, is not expected to develop to the usual winter volume until a decided cold snap or the customary infallible dicta of the weatherwise prophets have indicated a colder winter than those of 1889 and 1888. The lack of either or both of these indications is held responsible for the comparative slowness of trade during the past month or two which should have been marked by briskness.

Pea and Buckwheat have stiffened appreciably and are scarce in many quarters. Otherwise the scale prices are maintained fairly well, with no apparent desire to shade to secure business. The scale agreed upon by the sales agents for the month is: Stove, $4.30; egg, $4.05; chestnut, $3.95; broken, $3.75. The nominal price of pea and buckwheat are: Pea, $2.25; free-burning, $2.60@$2.75 on board. Buckwheat, Lehigh, $1.60; freeburning, $1.80@$1.85 on board. Several operators, however, claim that these sizes are so scarce that they will not do business in them at less than $3 and $2 respectively.

Bituminous.

The demand for soft coal seems to be increasing since the beginning of October at a rate which the supply cannot meet. There has been a general rush on the operators, and some of them complain that they cannot get a sufficient tonnage moved fast enough. Added to the scarcity of cars there is now a lack of vessels, many of which have been delayed by stress of weather.

The expected disturbance of the existing labor conditions in the Clearfield region, as reported from time to time exclusively in these columns, has had its effect on the smaller consumers of soft coal. They have of late been flocking into the market, evidencing a desire to lay in stocks for future consumption. This they find it difficult to accomplish, as several of the companies find it no easy matter to fulfill existing contracts.

The expected strike in Jefferson county, which it was anticipated would sound the keynote of a general movement all along the line, has been temporarily averted, though by what means is not yet known here. The men of the Punxsutawney collieries returned to work after their mass meeting on the 1st instant, and a general expectation now prevails that the wise counsels of Judge Dean (referred to in our editorial last week) have induced the miners to leave all contentions to be settled in March next, when the mens' demand of a 10 per cent. increase in wages is to be passed upon.

Although prices have not increased during the week, they have stiffened, and there is little soft coal to be had at less than what has for several months been a merely nominal scale. This is: At Baltimore, $2.40@$2.50, f. o. b.; Philadelphia, $2.50@$2.60; in New York Harbor, $3.25; alongside, $3.50.

Boston. Oct. 9.

(From our Special Correspondent.)

The anthracite coal market presents a very firm tone, while only a small demand prevails. This strange condition of affairs is easily accounted for when the surrounding circumstances are considered. It lies solely in the existing low freights and the large available supply of coal which is in this section. Middlemen and coal handlers generally are in possession of large stocks, and it may be added here that witbin the past two weeks Boston's coal supply has reached its maximum.

The small demand is brought forward by the inducements which low freights offer. The bulk of the shipments embrace orders made at old prices. Most of the contracts which were made to deliver at any period are about cleaned up and their end is welcomed by the trade. The new prices are held firm in the absence of business, and when the demand is resumed agents will not find any difficulty in holding them where they now are. The recent advance on all rail coal passed almost unnoticed.

Bituminous coal is quiet and lifeless. Some minor orders have been placed. The difficulty in forwarding, which is being generally experienced at tidewater, does not apparently affect Norfolk and Newport News, as companies at those points appear to be making very prompt shipments. The demand for gas coal is very good, and, owing to the labor difficulties and lack of cars, agents claim they have to neglect it. Some companies are delivering this kind of coal fairly fast, but most are operating in a lifeless way. Just now it is extremely difficult to get cars for Eastern shipment, and consequently this manner of forwarding is cut off.

The improvement in freights which has been predicted all along has failed to show up. All sorts of excuses have been offered in explanation of the erratic course of rates. "They are higher to-day" is the verdict of ship brokers, but then why make charters from Baltimore to New Bedford at 85 cents? Freights from Baltimore to Boston are lower, and 90 cents is the ruling figure, while 75 cents is good from Philadelphia and 50@55 cents from New York. An early change is looked for.

The retail trade is full of business. There is a good demand and it bids fair to continue for some time. Their big stocks do not decrease, however, as they are receiving as fast as they can make room. The prices recommended by the Coal Exchange rule and may be said to be very firm. In fact, at the last meeting of the Exchange an advance was considered, but to no end. They hope to increase prices at another meeting to be held this week.

The old story of trouble at Mystic wharf is again the leading topic among agents. The Boston and Maine Railroad claims to be unable to furnish cars to move the quickly arriving cargoes, and as a result some agents are paying heavy demurrage charges. During the past few years many agents have been caught in this fix. The wharf is flooded with coal and several cargoes are waiting for cars, under heavy demurrage charges. The road claims to have cars enough, but says its track system is not equal to handling them. The companies caught are very sore, and they will have cause to be when they settle their demurrage expenses.

Buffalo. Oct. 9.

(From our Special Correspondent.)

The situation of affairs here remains unchanged from last week. Lake freights on coal comparatively quiet, the principal reason being a short supply at the chutes, etc.; rates without variation. The shipments from this port by lake from October 1st to 8th, both days inclusive, were 89,140 net tons, distributed about as follows: 43,000 to Chicago, 16,860 to Milwaukee, 3,600 to Duluth, 5,730 to Toledo, 630 to Sheboygan, 1,350 to Kenosha, 6,900 to Superior, 2,500 to Racine, 1,500 to Fort William, 3,290 to Detroit, 1,000 to Ashland, 450 to Sault Ste. Marie, 330 to Bay City, 300 to Marine City, 600 to Gladstone, 400 to Amherstberg, and 700 to Windsor; total thus far this season, 1,525,000 net tons. Closing good demand for vessels, but little coal to forward. The rates of freight were 60c. to Chicago, 50c. to Milwaukee and Sault Ste. Marie, 55c. to Sheboygan, 70@75c. to Racine, 85c. to Kenosha, 30c. to Detroit, Toledo, Duluth, Ashland, Amherstberg and Windsor, on contract to Superior; 40c. to Marine City, Gladstone and Ft. William, and 25c. to Bay City.

Canal movement at Buffalo for first week in October of coal: Receipts, 4,234 net tons; shipments, 944 net tons.

Chicago. Oct. 8.

(From our Special Correspondent.)

The Chicago coal market exhibits a steady improvement, and its tone is much firmer and stronger for anthracite. The car famine has seriously injured business; shippers are unable to fill orders with every degree of promptness. Some say they could do many times the amount of business had they the transportation facilities needed. Lack of cars has created the appearance of a coal famine. Aside from this difficulty the conditions of this market are very satisfactory, and attaining a firmness not felt of late. Stocks held are small, and the demand is rapidly increasing. Ruling prices are very firm. Retail figures remain: Large egg, $6.25; small egg, range, and chestnut, $6.50. On cars f.o.b. Chicago per net ton: Large egg, $5.40; small egg, range, and chestnut, $5.65; Lehigh lump, $7.

The bituminous trade is also good, but, of course, subject to the same difficulties under which the anthracite market labors. Operators are all behind with their orders. The threatened strike of miners in Illinois, Indiana and Missouri has been averted by concessions made by most of the operators. This will settle prices of mining in Northern and Central Illinois. Prices are firm, and quotations per ton of 2,000 pounds are: Erie, $4.25; Pittsburg, $3.50; Indiana block, $2.65; Blossburg, $4.15; Greene and Sullivan County (Ind.), shaft, $2.25@$2.40; Jackson Hill, $3.25@$3.40; Jackson shaft, $3.35@$3.45; Hocking Valley, $3.30; Youghiogheny gas, $3.50.

The coke trade is in excellent condition, and were it not for the difficulties encountered with the car service little could be wished for. The car supply was only half enough last week to mee requirements in the Connellsville region, and large quantity was stacked in yards. Prices

main the same: Connellsville 72-hour, $5.20; domestic crushed, $4@$4.25; Elk Lick, $4.40 per ton of 2,000 pounds f.o.b. Chicago.

Pittsburg. Oct. 9.

(From our Special Correspondent.)

Coal.—The market was firm here and elsewhere. Coal in the pools continues scarce. Between those that have left for other parts, and those that are not inclined to work, the amount of coal being mined is limited. The Ohio River shipment since our last reached about 2,800,000 bushels.

Nominal rates in pools:

	Per 100 bushels.		Per 100 bushels.
1st pool	$4.75	3d pool	$3.90
2d pool	4.50	4th pool	3.25

Railroad coal, $5.00@$5.50.

Connellsville Coke.—Market firm; the demand exceeds the supply. September made a very creditable showing, notwithstanding the many disturbing elements that it was surrounded by. The abundance of orders was due to the resumption of certain furnaces which had been out of repair when cars were afforded producers; deliveries were prompt, as there was plenty of motive power. Shipments last week, 6,760 cars; increase, 140 cars compared with previous week. Western shipment increased 225 cars; Eastern and Pittsburg fell off. Shipment in tons, 121,680. The reported advance did not take place; the coke men have have a good thing and they know it.

The rates were for 2,000 pounds f. o. b. cars at ovens: Blast furnace coke, $2.15; foundry coke, $2.45; crushed coke, $2.65.

Freights to Pittsburg 70c. per ton; Mahoning and Shenango Valleys, $1.35; St. Louis, $3.35; Cleveland, $1.70; Chicago, $2.75.

FREIGHTS.

From Philadelphia to: Alexandria, †.85; Baltimore, †.60; Bangor, *.85: Boston, .75@.85; Charleston, .75; Galveston, 2.90; Lynn, *1.00; New Bedford, *.75; Newburyport, *.75; New York, †.90; Norfolk, .70; New Orleans, 2 50; Portland, *.75; Richmond, .80; Savannah, .90; Washington, †.85.

*And discharging. †Alongside.

METAL MARKET.

NEW YORK, Friday Evening, Oct. 10.

Prices of silver per ounce troy.

Oct.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Oct.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
4	4.86½	51	1.12¼	8	4.86¼	50½	1.11
6	4.86½	50⅝	1.11⅝	9	4.86¼	51¼	*
7	4.86½	50	1.10⅛	10	4.86¼	50	1.10

*1.10¼@1.10.

Owing to continued weakness of India exchanges and undiminished stock of silver visible in New York prices have suffered a further decline. The lack of speculative interest has also depressed prices, which the purchasers of the Government have been unable to counteract.

The United States Assay Office at New York reports total receipts of silver for the week to be 127,000 ounces.

Silver Bullion Certificates.

NEW YORK STOCK EXCHANGE.

	Price. H.	Price. L.	Sales.
Oct. 4	113	112⅝	412,000
Oct. 6	112⅛	111¼	240,000
Oct. 7	111½	110¾	318,000
Oct. 8	111⅝	111	405,000
Oct. 9	111¼	110⅛	207,000
Oct. 10	110¾	110	177,000
Total sales			1,759,000

Foreign Bank Statements.

The governors of the Bank of England at their weekly meeting on Thursday made no change in its rate for discount, and it remains at 5 per cent. During the week the bank lost £658,000 bullion, and the proportion of its reserve to its liabilities was reduced from 33¼ to 31¼ per cent., against an advance from 33·30 to 33·70 per cent. in the same week last year, when its rate for discount was 5 per cent. On the 9th instant the bank gained £128,000 bullion on balance.

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked
Trade dollars	$ .83	$ .85
Mexican dollars	.85	.86½
Peruvian soles and Chilian pesos	.78	.80
English silver	4.82	4.86
Five francs	.94	.95
Victoria sovereigns	4.84	4.93
Twenty francs	3.86	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.78	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.60
Ten guilders	3.96	4.00
Bar silver	1.10	1.11

Copper.—The market has continued dull and prices have remained unchanged. Manufacturers maintain an all-round waiting policy, thinking that by so doing they may be able to make contracts at lower prices. We doubt, however, whether this is to their advantage, as in the present flourishing condition of trade we do not think a reduction in prices would be desirable, but on the contrary would have the effect of demoralizing trade to some extent, and of disturbing confidence in the market. Consumption goes on at a very steady rate, and everybody seems to be well booked ahead with orders. Lake companies have not shown as yet any disposition to make any change in their prices, which remains at 17c. We quote Lake copper at 17, Arizona copper at 15¼@15½, and prime casting copper at 14⅝@14½.

The market in London has been subjected to small fluctuations during the week, which has been caused less by a speculative movement than by the condition of the money market, which has had a great deal of influence on a large number of commodities. G. M. B's. touched £58 17s. 6d. on October 7th, but since then have again advanced, and we close to-day at £59 5s. for spot and £59 12s. 6d. for three months.

English toughs, £62 10s.@£63; best selected, £66 10s.@£67; India sheets, £70@£70 10s.; strong sheets, £73@£73 10s., and yellow metal at 6½@65⅝.

The exports of copper during the past week were as follows:

To Liverpool—	Copper matte. Lbs.	
S. S. The Queen	3,0 5 bags 322,896	$3,000

Tin.—Since our last report some more arrivals are to hand, and prices for spot have, in consequence, given way a little more; futures, however, have suffered less, the London quotation having remained quite steady for later deliveries. Consumption continues at a very satisfactory rate, and we understand that most of the tin which is now arriving is being shipped to consumers immediately. Stocks in the warehouse continue very limited, and this condition of things is likely to last until the latter part of next month, as larger supplies are not expected to arrive before that time. We quote spot at 23¾, October, 23¼; November, 22·75, and December, 22.50.

The London market has declined for spot to £101, owing to the stringency of the money market, but at the same time has shown very great firmness. The lowest price touched was £100 10s., and the highest £103. We close at £101 for spot, and £99 for three months.

Lead.—The firm feeling for this metal continues, and the scarcity already reported is more marked than ever, and has now reached a point where it is almost impossible to buy even one or two carloads. Consumers need all they have (and that is very limited), as they have not been buying freely at the advance, not thinking that the condition would be such as it has now proved to be. The same state of affairs prevails throughout the West, and prompt delivery lead is unobtainable. We have no doubt that (with no lead coming in from the West, and near shipments from Europe being taken care of and not for sale), the market is very likely to experience a further advance, and not only this, but consumers may find it a most difficult task to cover their wants unless they do so in reasonable time. Our advices from abroad are about to the same effect, no metal being obtainable there for immediate, and very little for October, shipment, and what there is for such shipment will certainly not go forward until the end of October, so that the lead will not reach here before the latter part of November. Prices here for spot have advanced to 5·90c., and nothing more is to be had at that price. For November, 5·70c. is bid, and there are no sellers below 6c.

London closes firm at £14 12s. 6d. for late October or early November delivery, foreign ports.

St. Louis Lead Market.—Messrs. John Wahl & Co. send us the following by telegraph to-day: "A little freer offering of spot lead is noticeable, and the indications are that consumers will have less difficulty in the near future to be supplied for their current requirements. Still, the spot article is scarce and brings a decided premium over lead for deferred delivery. Spot lead is quoted nominally at 5·35@5·40c., whereas November and December lead has been offered and not taken at 5·05."

The Chicago Lead Market.—Messrs. Everett & Post telegraph us as follows: "There has been an increased demand at this center for lead, particularly for spot delivery, and sales foot up close to 500 tons at 5·35@5·50c., the latter price for spot metal. The closing is very strong at 5·50c., and there is very little lead offering at that price."

Spelter.—This article has also shown a large advance. Consumers now find out the great scarcity of the metal and are anxious to cover their wants up to the end of the year, and in consequence prices have quickly advanced to 5·50@5·60c. East St. Louis, and for near delivery 5·90c. has been paid in New York. Most of the Western smelters are sold out up to the end of the year, and others are keeping back what little they have.

Europe continues also very firm, and good ordinary brands are quoted at £25@£25 2s. 16. and specials 5s. higher.

Antimony is somewhat easier. We quote Cookson's at 22c.; Hallett's at 19¾@20c., and "L. X." at 20¼c.

Quicksilver.—The metal is a little quieter than last week. People increased their stock immediately before the tariff bill went into effect, hence the decreased demand. London quotations (Rothschild's) remain £10 10s., but New York prices are slightly lower at $56.50@$57.50.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, October 10.

One must not look for startling or frequent changes in the condition of the iron market or disappointment will ensue. For some months past there has been no radical change in the situation, except a slight reduction in the price of pig iron and steel rails. The week under review does not essentially differ from last week. Pretty much the same features are observed.

American Pig Iron.—The consumption, it is stated by well-informed persons, has been almost, if not altogether, equal to the production; but despite this, and the fact that No. 1X, both Northern and Southern is pretty scarce, the price has not advanced. Indeed, we are informed of a sale of 1,000 tons of Tennessee iron (No. 1) at $16.25, but this can scarcely be regarded as a ruling quotation, inasmuch as there is not another similar offer in the market. We quote this week: Northern iron, No. 1 X, $17.50@$18; No. 2 X, $16.50@$17. Southern, No. 1 X, $16.50@$17.50, and No. 2 X, $15.50@$16.50.

Scotch Pig Iron.—We hear of no sales of Scotch pig iron this week. On the other side the market is reported as rather unsettled, but there has been no very great rise. The newspapers contained singularly little news of the labor troubles, and one dispatch, dated the 7th inst., stated that although there was no prospect of the strike of the Scotch furnace men coming to an end, some Glasgow iron brokers were selling with a view to discounting a settlement of the trouble, and that pig iron had declined to 51s. 11d. The market, it was also reported, had gone in a direction different from what was anticipated.

Later information was to the effect that makers had withdrawn all quotations, and that there was no indication as to how and when the strike would be ended. We quote, nominally, No. 1, Coltness, $24.50; Dalmellington, $22; Eglinton, $21.25.

A cablegram from a prominent furnace owner received as we go to press says: "The recent fluctuations in this market are due chiefly to the uncertainty of the position. We think the strike will be protracted. It is bears, who, for speculative purposes, have been spreading reports that the troubles would last but a short time." To-day the price of warrants declined from 52s. 3d. to 51s. 11d.

Spiegeleisen and Ferromanganese.—Very little business is being transacted in either of these. The condition of this branch of the iron market is radically the same that we have reported for some time past. Buyers allege that they are in possession of all the spiegel and ferro they will need for some time to come, and, as sellers will not lower their prices, no business results. In regard to quotations, we give the following: 20 per cent. spiegeleisen, $31; and 80 per cent. ferromanganese, $70.

Steel Rail.—Some sales, individually small but in the aggregate amounting to some 5,000 tons, are reported for the current week. The price is in the neighborhood of $30. Some mill men quote $31 as their lowest figure, but there is little doubt that $30 is nearer the market price, and for a fair sized order even less might be obtained by the buyer.

Rail Fastenings.—These continue unchanged as to prices and dullness: Quotations are nominally as follows: Spikes, 1·95@2c.; angle plates, 1·72@1·76c.; bolts and square nuts, 2·70c.; hexagonal nuts, 2·90@2·95c.; complete joint, iron and steel according to weight.

Tubes and Pipe.—The Association met during the week, and it was decided to leave the schedule unchanged. Business is good and discounts are well maintained. Ruling discounts on car lots: 47½ per cent. on butt, black; 40 on galvanized; 60 on lap, black, and 47½ on lap, galvanized; 45 on 1¾-inch boilers; 50 for 2 inches and larger. Casing, all sizes, 50 per cent.

Merchant Steel.—Business in merchant steel is reported as much improved, and dealers are more hopeful. Our last quotations hold good for the present week. We accordingly repeat them: Best English tool steel, 15c. net; American tool steel 7½@10c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2·60c.; open-hearth spring, 2·60c.; tire steel, 2·60c.; toe calks, 2·60c.; flat file, 4¾c.; mill file, 5¼c.; taper file, 7¼c.; first quality sheet, 10c.; second quality sheet, 8c.

Old Rails.—There has been some inquiry but not much actual business. Holders do not seem inclined to give any concessions and their views are above buyers', in consequence of which we do not hear of any sales of importance. Quotations are given: $26 for tees and $27 for doubles.

Structural Iron and Steel.—Business is picking up in this branch of the iron market, but quotations remain undisturbed. We quote this week: Universal plates, 2·25@2·28c.; bridge plates, 2·15@2·20c.; angles, 2·10@2·15c.; tees, 2·65c.; beams, 3·10c.

Chicago. Oct. 8.

(From our Special Correspondent.)

October has brought with it an improvement in the Chicago iron market. Buyers who have been hesitating, hoping that the tremendous production would exceed demand, and result in lower prices, have been forced at last into the market. Notwithstanding the unprecedented output of furnaces, accumulated stocks are small, and the wavering toward a lower range of prices felt last month has given way to firmness. Foundries and machine shops are generally well employed, and an air of prosperity pervades all iron industries. Activity is particularly noticed among the heavier machine shops manufacturing mining appliances. The wholesale business is greater than ever before in the history of Chicago, and merchants do not complain about small margin for profit.

Pig Iron.—A better inquiry is reported for all around coke irons. Northern and Southern are in good request. But little demand exists for Lake Superior charcoals just at present, but an increased inquiry is noted. Silveries and soft irons are called for in moderate amounts. Heavy consumption continues without abatement. Large quantities of iron are being melted; foundries are running short, and many of them will soon be in the market for their winter's supply. Limited car service affects the iron trade as well as the coal market, as it extends over all the railroads. The outlook is considered good and quotations well maintained. We quote to-day for cash per ton of 2,240 pounds, f. o. b. Chicago, for Nos. 1 and 2, Lake Superior charcoal No. 3, for car wheels, Nos. 4 and 5 for malleable, $19.50@$20; Lake Superior coke, Bessemer, $18.50; Lake Superior coke, Bay View No. 1, $17@$17.50; No. 2, $16@$17; No. 3, $15.50@$16; Southern coke No. 1, $16.50@$17; No. 2, $16@$16.50; No. 3, $15.50@$16; Southern charcoal, $19@$19.50; standard Southern car wheel, $22@$24.50; Ohio softeners, Hanging Rock, $18@$18.50; Jackson County, $18.50@$19; Hanging Rock, cold blast, $26@$28; warm blast, $23@$25; No. 1 Scotch, according to brands, $26@$27; American Scotch, $19@$20; Bay View Scotch No.1, $18; No. 2, $17; Chicago Scotch No.1, $17; No. 2, $16; Emma Scotch, $19@$19.50; black band, Hubbard Scotch, $19; Haselton, $19; soft silvery, $18; Wellston No. 1, $19; No. 2, $18.50@$19; Hamilton No. 1, $19.25@$19.75; Norton No. 1, $17.75@$18.25; Zanesville No. 1, $18.75@$19.25.

Structural Iron.—Some heavy prospective contracts are reported in connection with the elevated roads. Specifications for bids have been issued by the South Side Elevated Railway for stations to be erected along its line, which are to be entirely of iron and steel. Several large buildings are also being figured on, and the contract for the new dry-goods building, to be the largest in the world, has been let. The new Chicago Terminal Railroad is also in the market. In addition to work on hand the outlook for continued heavy demand is excellent. Quotations are held very firmly; they are: For car lots, f. o. b. Chicago, iron and steel angles, $2.35@$2.40; Universal plates, $2.55; sheared plates, $2.50; tees, $2.75@$2.85; beams and channels, $3.20. Store prices are: Angles, $2.50@$2.60; tees, $2.90@$2.95, and beams and channels, $3.50@$3.70.

Bar Iron.—Demand continue heavy. The difficulty is to find a mill able to make early deliveries on ordinary specifications. Prices firm. Local mills are still quoting half extras at $1.90. Valley mills are asking $1.75 at mill. Here $1.80 is the ruling price for car iron. Store trade continues good, and dealers quote $2.10@$2.20, with extras, according to quality and quantity.

Black Sheet Iron.—Demand is strong for refined iron and soft steel sheets of the lighter gauges. Mills are very busy, and it is almost impossible to obtain prompt delivery on new orders. No. 27, f.o.b. mill, continues firmly quoted $3.05@$3.10, for car lots, freight on which is 15 cents. At stores small lots are sold at $3.20 for No. 24, $3.30 for Nos. 25 and 26 and $3.46 for No. 27. Smooth sheets at stores maintain the schedule of 60c. per hundredweight.

Galvanized Sheet Iron.—Demand continues as heavy as heretofore reported and mills are overcrowded with work. Prices are unchanged. Discounts on both cheap and standard brands are still 62½ per cent. on Juniata and 62½ and 5 per cent. on charcoal from stores.

Merchant Steel.—Manufacturers are full of work and will continue so for some time to come. Prices are firm. We quote as follows: Tool steel, $7.75@$8; specials, $12@$25; open-hearth machinery, $3; Bessemer machinery, $2.50@$2.70; open-hearth spring steel, $2.75@$2.80; tire, $2.50@$2.60; toe calk, $2.70@$2.80; sleigh shoe, $2.40@$2.50; cutter shoe (T. & B.), $2.65@$2.70; crucible sheet steel, $7@$10; crucible spring, $3.75.

Plates, Tubes, etc.—Plate and tank iron is in good request from stores, but a falling off in mill business is reported. Tubes are very firm and hard to get in quantities. Prices are: tank iron, $2.70; tank steel, $2.90; heavy sheets from 10 to 14, $2.90@$3; steel sheets 10 to 14, $3.25@$3.50; shell iron, $3@$3.25; flange iron, $4@$4.25; flange steel, $3.50; shell steel, $3.25; boiler rivets, $4@$4.25; fire box iron and steel, $4.75@$5.50; boiler tubes, 4½ inches and larger, 52½ per cent.; 2 to 4 inches, 50 per cent., and 1¼ inches and smaller, 45 per cent.

Nails.—Demand for steel cut nails is good, and wire nails are in good request. The volume of sales from stocks is unusually large, and prices, while firm, have not been increased since our last report; $2@$2.05 is quoted for steel cut, and $2.60@$2.65 for wire nails per keg at stores.

Steel Rails.—A pronounced weakness is developing in this market. Orders are anything but large or numerous; the primary cause for which may be attributed to the late stringency in financial circles, which cut off funds for railroad extensions and new enterprises in this direction. Small sales have been the rule during the past week at about $33.50.

Railway Track Supplies.—The good demand reported last week is sustained. Fish plates have advanced. We quote iron fish plates $2.10@$2.15; steel fish plates, $2.20@$2.25; bolts, square nuts, $3@$3.05; hexagon nuts, $3.10@3.15, according to quantity; spikes, $2.25.

Scrap Iron.—Trade is somewhat improved and steady. We quote as follows: Country mixed scrap, $15.50@$16.50, according to condition; No. 1 mill, $14@$14.50; light wrought, $9@$9.50; horseshoes, $19@$19.50; axles, $26; cast machinery, $13@$14; stove plates, $9.50@$10; borings, $9.50@$10; wrought turnings, $13.50; No. 1 railroad shop or forge, $21.50; track scrap, $19.50@$20.

Old Wheels and Rails.—This market is quiet at present. We quote: $27 for old iron rails f.o.b. Chicago; old steel rails, $19.50@$21, according to length, condition, etc.; guards and frogs, $18.50@$19; old car wheels, $19.50@$20.

Louisville. Oct. 7.

[Special Report by Hall Bros. & Co.]

The market is of about the same tenor as our last report, in so far as the local situation is concerned. There is some inquiry from the outside trade, and orders for carload lots up to 300, 500 and 1,000 tons have been entered at full market figures. The market is holding its own with a tendency to advanced prices. Furnaces seem well booked and are holding firm. We quote substantially as last:

Hot Blast Foundry Irons.—Southern coke, No. 1, $15@$15.25; No. 2, $14.25@$14.50; No. 3, $14@$14.25. Mahoning Valley, lake ore mixture, $17.75@$18.75; Southern charcoal, No. 1, $17@$17.50; No. 2, $16.50@$17. Missouri charcoal, No. 1, $18@$18.50; No. 2, $17@$17.50.

Forge Irons.—Neutral coke, $13.75@$14; cold short, $13.75@$14; mottled, $12.75@$13.25.

Car Wheel and Malleable Irons.—Southern standard brands, $22@$23; other brands, $18@$19. Lake Superior, $22.50@$23.

Philadelphia. Oct. 9.

(From our Special Correspondent.)

Pig Iron.—A few makers of pig iron have been experimenting on quoting an advance on their brands of 25 cents, but nearly all makes, especially mill brands, can be had at formerly quoted rates. The pig iron people say consumption is gaining, but whether this be true or not, prices are stronger than last week. Makers of mill irons solicited offers a few days ago, but are not anxious now. Large sales of forge have been made this week and there are quite a number of inquiries today, which gives some room for predictions that standard forge irons will crowd up to the $15.50 level before the close of the month. No. 1 foundry shows a stronger front than last week, except on a few poor brands which are offered at the usual discount. Sales were made to-day at $18.25; No. 2, $16.75; Bessemer, $18.50 at furnace.

Foreign Material.—Quotations are $30 for spiegel and $68 for ferro-manganese.

Steel Billets.—About $31 will be paid for billets and about $30.50 for slabs. There were offers made to-day at these figures.

Muck Bars.—To-day's quotations range from $30 to as high as $31 for a guaranteed article, but business has been trifling.

Merchant Iron—Merchant bars are 1·90 here and 1·80@1·85 at interior mills. Car building orders are now anticipated, and for very large lots. A great deal of car building iron, it is understood, will be ordered within the next thirty days.

Nails.—It is no easy matter to sell car lots at full prices. Inferior nails, so called, at last are selling, it is rumored, at $1.75 at competitive points. Small store lots at $2.

Sheet Iron.—All sheet mill products are in good request and at full card rates.

Skelp.—A good business is to be done at 1·95 and 2 cents for grooved, but makers are asking more. Sheared ranges from 2·15 to 2·25.

Wrought Iron Pipe.—The trade is in excellent shape at old discounts. No word at present writing from Pittsburg meeting.

Plate and Tank.—Winter business was taken yesterday at an average of $2 per ton off November quotations. Steel bridge and ship plate quotations were made to-day at 2·40@2·50.

Structural Iron.—No change in prices. Mills crowded with work. Winter business is offered if concessions will be granted. Angles, 2·20; plates, 2·40; tees, 2.70; beams and channels, 3·10.

Steel Rails.—Nothing is heard of, except small orders at $30.50, but there is sufficient business to keep all mills on full time.

Old Rails.—Sellers can get $25.50 for all the rails they can offer.

Scrap.—Sales of railroad scrap were made at $22.25.

Pittsburg. Oct. 9.

(From our Special Correspondent.)

Raw Iron and Steel.—The market since our last was far from being a satisfactory one as regards prices or demands, the sales being confined generally to limited amounts for use principally as mixtures. Prices for certain descriptions were maintained; for others again shading was the rule. For No. 1 grades, city furnaces, the market was steady but not very active; at the same furnace men refused to make concessions. The fact is, raw iron is down to a very low figure; while holders may be willing to accept present rates for iron on hand, they will refuse to sell for later deliveries unless at enhanced figures.

Compared with one year ago, prices are materially lower, taking the price of ore, coke and labor into consideration. As regards the future of iron there is a wide difference of opinion. For manufactured iron there was a large demand for the various descriptions. So far as could be ascertained, all the mills have sufficient orders booked to keep them employed for some time, while others have sufficient to keep them employed the balance of the year.

Taking these circumstances into consideration, it would be nothing more than fair to presume that an advance in the raw material is not far off. Reports from the Shenango and Mahoning Valley represent stocks at the furnaces light, with many of them busy at work filling contracts made during the summer at prices higher than the rates ruling at present. Relatively there is a scarcity, but at quoted rates there is plenty of iron—perhaps not the particular brands that are preferred, but there are good substitutes, and at regular market prices there is enough good iron to satisfy all requirements. The sales of muck bar for some weeks past have been very large; holders are still firm; prices have an upward appearance, while stocks in first hands are being gradually exhausted. Blooms, billets and slabs are not so firm, with a slight falling off in demand, without being quotably lower. Old iron rails, although not offering freely, are evidently weaker, prices being shaded in order to effect sales. Scrap material finds ready sale at current rates. Skelp iron in fair demand; prices maintained. Ferro-manganese not so firm; lots have been offered below last week's prices. Spiegel prices are a shade lower. Grey Forge sales, to a limited amount, were made at rates current at date of last report. Bessemer in light demand; dealers are evidently supplied for the present.

Scrap Material.

500 Tons Crucible Steel	net 28.25 cash.
200 Tons Iron Axles	net 29 25 cash.
200 Tons No. 1 Wrought Scrap	net 22.60 cash.
100 Tons Iron Axles	net 29.00 cash.
100 Tons No. 1 Wrought Scrap	net 22.50 cash.

Coke Smelted Lake and Native Ores.

3,000 Tons Bessemer, Oct., Nov., Dec	17.65 cash.
2,000 Tons Bessemer	17.75 cash.
1 000 Tons Grey Forge	15.00 cash.
1,000 Tons Bessemer No. 1	18.00 cash.
1,000 Tons Grey Forge	15.00 cash.
600 Tons Grey Forge	15.00 cash.
500 Tons White Iron	14.50 cash.
500 Tons Grey Forge	15.00 cash.
500 Tons Grey Forge	15.25 cash.
400 Tons Grey Forge	15.25 cash.
400 Tons No. 2 Foundry	15.75 cash.
500 Tons No. 2 Foundry	16.00 cash.
200 Tons No. 1 Mill	15.25 cash.
125 Tons Off Bessemer	17.00 cash.
100 Tons Silvery Extra	19.50 cash.
100 Tons Silvery	17.00 cash.
50 Tons No. 2 Foundry, all ore	17.50 cash.
50 Tons No. 2 Foundry	16.25 cash.

Muck Bar.

1,000 Tons Neutral, Nov., Dec	30.50 cash.
1,000 Tons Neutral, Nov., Dec., Jan	30.75 cash.
1,000 Tons Neutral, Jan., Feb	31.35 cash.
1,000 Tons Neutral, Dec., Jan., Feb	31.25 cash.
600 Tons Neutral	31.00 cash.
500 Tons Neutral	31.00 cash.
500 Tons Neutral, spot	30.50 cash.

Steel Slabs and Billets.

3,000 Tons Steel Billets	29.00 cash.
2 000 Tons Billets, Wheeling	29.50 cash.
1,000 Tons Nail Slabs, Wheeling	29 50 cash.
600 Tons Billets	30.00 cash.
750 Tons Billets, Nov	29.50 cash.

Spiegel.

250 Tons 20 per cent., Pittsburg	33.00 cash.

Bloom Ends.

1,000 Tons Bloom and Rail Ends	21.75 cash.

Skelp Iron.

500 Tons Sheared Iron	2.25 4 mo.
325 Tons Wide Grooved	1.97½ 4 mo.
200 Tons Narrow Grooved	1.87½ 4 mo.

Steel Wire Rods.

500 Tons American Fives, Nov., Dec	41.00 cash.

Ferro-Manganese.

100 Tons 80 per cent., Pittsburg	72.00 cash.
50 Tons 80 per cent., Baltimore	69.00 cash.

Old Iron Rails.

1,500 Tons American T's	27.75 cash.
1,000 Tons American T's	27.80 cash.
1,000 Tons American T's	27.75 cash.
100 Tons Steel Rails	26.50 cash.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Oct. 10.

Heavy Chemicals.—There is nothing very new to report in the market for heavy chemicals. A great many of the various chemicals are scarcer and firmer and considerable business is reported

for delivery over this year and 1891. Our Liverpool letter will be found interesting.

Caustic Soda.—The various brands are all scarce and the tone of the market is firm. Our quotations are: For 60 per cent., 3·50c.; 74–76 per cent., 3·25@3·30c.; 77 per cent., 3·25c.

Carbonated Soda Ash.—For the 48 per cent. variety, we quote 1·55@1·60c.; 58 per cent., 1·50@1·55c. The article is strong and scarce.

Caustic Soda Ash.—Caustic ash is in some request at 1·47½@1·52½c., according to brand.

Bleaching Powder.—Bleach is reported as firm, and growing scarcer. We quote this week 1·57½@1·60c.

Sal Soda.—This article is firm at 3·12½@3·18¾c.

Acids.—No change in the situation can be reported of the acid market. Everything continues in the old channel, and there is nothing new to say. As exemplifying the feeling which prevails among our acid dealers, it can be said that a great many believe that some manufacturers ought to retire from business in order to give the suffering rest an opportunity to sell all their product. However, the person who should be the savior of the market has not been decided upon. There is but little doubt that the Darwinian principle of the survival of the fittest will in time apply in the acid market. We are reliably informed that the production of acid is in excess of the consumption, and this, among other things, may serve to explain the state of affairs prevailing in this market. Acid continues to be sold at pretty low prices and in good quantities.

We can only repeat our last week's prices: Acid, per 100 pounds in New York and vicinity: Acetic, $1.72½@$2.20; muriatic, 18-degree, 80c@$1.20; muriatic, 20-degree, 90c.@$1.50; muriatic, 22-degree, 90c.@$1.75; nitric, 36-degree, $2.75@$3.25; nitric, 40-degree, $3.25@$4.50; nitric, 42-degree, $3.75@$4.75; sulphuric, 60-degree, 70@80c., and sulphuric, 66-degree, 80c.@95c.

Fertilizing Chemicals.—Reports from the South would indicate that there is considerable activity among users of fertilizers in that section, but so far as our market is concerned we do not hear of anything important going on. About the only new feature is sulphate of potash, which, since the passage of the McKinley bill, is admitted free of duty. In consequence the price has gone down, as may be seen from the appended quotations. High grade dried blood, $1.80@$1.85. For the low grade the price is $1.70@$1.75. Azotine, $1.85@$1.90. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $19@$20 per ton, and low grade 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $18.25@$18.75. Fish scrap, $20@$20.50 per ton f. o. b. factory. Sulphate of ammonia, prime gas liquor, $3.25; prime bone liquor, $3.12½. Concentrated tankage, $1.67½@$1.70. Refuse, bone black, guaranteed 70 per cent. phosphate, $17.50@$18 per ton. Dissolved bone black is nominally 95c. per unit for available phosphoric acid, although on large lots prices might be somewhat reduced, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, $20@$23; ground, $25@$26.

Charleston rock, undried, $6 per ton; kiln-dried, $7 per ton, f. o. b. vessels and cars, $6.50@$7.25. Freights by sail from Charleston to New York, $2.75@$3.50 per ton. Charleston rock, ground, $11.75@$12.25, ex-vessel at New York.

Sulphate of potash 48 to 52 per cent. is quoted at $1.12½ per 100 pounds: manure salts, high grade, basis, 90 per cent., $2.02½ per 100 pounds.

Kainit.—A few sales are reported at previous quotations, $9.75@$10 for invoice weight and actual weight respectively.

Muriate of Potash.—Nothing new doing in muriate, which continues to be quoted at 1·77½@1·82½. About 500 tons arrived at various ports during the week.

Nitrate of Soda.—Some ships arrived during the week, and all the cargoes were sold but one, which is reported to be in the hands of speculators. Spot quotations continue $1.80, and to arrive $1.75.

Brimstone.—On the spot, quotations are $25 for seconds, with no thirds offered. To arrive, $23 for seconds, and $22.50 for thirds. This market continues firm, but consumers are not buying much, because they regard prices as too high and because the spot supply is quite limited.

Liverpool. Oct. 1.

[Special Report by Messrs. J. P. Brunner & Co.]

A firm market for heavy chemicals, and in some cases prices tending upward.

For forward delivery the "Union" have this week altered the minimum prices as follows: Caustic ash—November, December, 1⅝d.; all 1890, 1¾d. Carb. ash—November, December, 1¾d.; all 1890, 1⅞d. Caustic soda, 70 per cent.—November, December, £11; all 1890, £11. Chlorate of potash—November, December, 5½d. per pound; all 1890, 5½d. per pound. They have made no alteration in the price of bleach.

For prompt delivery most lines of heavy chemicals continue very scarce.

Soda ash almost unobtainable and nearest spot values are caustic ash, 1⅝d.@1½d.; carb. ash, 1⅝d.@1½d., according to brands.

Soda crystals in demand at £3 5s.@£3 7s. 6d. per ton.

Caustic soda was rather quiet at the end of last week and some resales of 70 per cent. were made for October at £11 5s.@£11 7s. 6d., but the demand has improved again, and nothing now offering at under £11 10s., while in some cases manufacturers ask 5s. per ton more money. Sales made for the States to-day at £11 10s.

Sixty per cent. scarce at £10 10s.@£10 15s.

Seventy-four cent., £12 15s.; seventy-six per cent., £13 5s.@£14.

Bleaching powder scarce, the market having been cleared of all offering at £5 15s.@£6.

Chlorate of potash improved at 5¼d.@5½d. per pound.

Bicarb. soda firm at £6 10s. per ton for one hundredweight kegs, with usual allowances for larger packages.

Sulphate of ammonia dull at about £11 15s. for good gray 24 per cent. f.o.b. here, in double bags.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Oct. 10.

Bricks.—Trade in bricks is once more resuming its normal channel, and the volume of business during the week is reported as fairly large. Manufacturers wish to avoid the danger of sending too much brick to this market, and only a comparatively moderate supply is coming forward. Quotations, as given us by prominent dealers, are: Haverstraws, $6.25@$7 per thousand; Uprivers, $6.25@$6.50; Jerseys, $5@$5.50; pale, $3.50@$4.

Lime.—There have been some arrivals during the week, and things, so far as the Maine lime people are concerned, are beginning to look brighter.

The McKinley bill has raised the duty on lime, so that the St. John (Canada) product is practically shut out from this country. The agent of some St. John lime manufacturers in the course of an interview said as follows to a representative of the ENGINEERING AND MINING JOURNAL: "This tariff bill excludes our product from the American market. Our exports into this country amount to only about 2,000,000 barrels per annum, and the Rockland (Me.) people will get the benefit of the increased duties." Without competition it would seem that lime would go up, but we are assured by the agents of the Maine producers that the price will not go up.

Quotations remain unchanged: Rockland, common, $1 per barrel; finishing, $1.20; St. John, common and finishing, 90c.@$1; Glen Falls, common and finishing, 90c.@$1.10.

Cement.—What we said in our last report of this branch of the building material market practically applies this week. A fair demand and a fair business. We continue to quote: Rosendale, 90c.@$1; Portland, American, $2.15@$2.45; foreign, $2.40@$2.50; special brands, $2.60@$2.85; Roman, $2.75@$2.95; Keene's coarse, $4.50@$5.50; Keene's fine, $7.25@$8.50 per barrel.

IMPORTS AND EXPORTS OF METALS AT NEW YORK FROM SEPTEMBER 27 TO OCTOBER 4 AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co.		322
Hendricks Bros.		50
La Marche's Sons, H.		5
Lewisohn Bros.		150
Meyer, G. A. & E.		9
Milne & Co.		74
Muller, Schall & Co.		123
Total		733
Corres. date, 1889.		685

Pig Lead.	Lbs.	Lbs.
Amer. Metal Co.		15
Bruce & Cook		25
Caswell, E. A.		211
Hendricks Bros.		100
Naylor & Co.		10
Schultz & Co., A.		98
G. W. Sheldon		149
Total		608
Corres. date, 1889.		251

Tin.	Tons.	Tons.
Abbot, Jere, & Co.	20	145
Amer. Metal Co.	271	2,396
Bidwell & French.	48	1,063
Bruce & Cook	10	20
Carter, Hawley & Co		80
Cohen & Co., A.		10
Cohen, H.		20
Cort & Co., N. L.		125
Crooks & Co., R.		85
Davol & Son	10	49
Hendricks Bros.		42
Knauth & Kuhne		10
Lehmaier, S., & Co.	40	172
Lewisohn Bros.		45
Merchant & Co.	10	60
Muller, Schall & Co.	35	750
Naylor & Co.	69	1,405
Nissen, Geo.		10
Phelps, Dodge & Co	300	3,196
Thomson, A. A. & Co.		50
Thomson, D. & Co.	20	90
Townsend, & Co., J. R.		50
Trotter & Co, N.		75
Total	833	9,948
Corres. date, 1889.	605	8,481

Tin Plates.	Boxes.	Boxes.
Adams & West'ke Co.		70
Bruce & Cook	4,156	108,104
Byrne & Son		1,000
Central Stamp. Co.	1,645	54,786
Coddington & Co.	1,843	122,333
Cohn & Co	1,028	15,640
Con. Fruit Jar Co.		120
Corbiere F. & Co.		7,902
Cort & Co.	6,700	174,458
Crooks & Co.	5,760	81,496
De Milt & Co, H R	787	9,687
Dickerson, V. D. & Co	5,127	307,541
Fenton, D. E.		3,890
Haberman, F.		66
Herring, Chas. E.		1,000
Iron Clad Mfg. Co.		597
Lalance & G. M. Co.		9,000
Lazard Bros.		1,048
Lehmaier, Schw'z & Co.		200
Merchant & Co.	948	24,582
Mersick & Co.	573	10,581
Morewood & Co.		40,739
Newell Bros.		416
Payne, S. H. & Co.		934
Pratt Mfg. Co.		95,271
Phelps, Dodge & Co	7,032	640,736
Schneider & Co., J.		3,365
Shepard & Co.	1,032	14,053
Standard Oil Co.	3,739	11,645
Taylor, N. & G.		1,229
Thomson & Co., A. A.	1,179	29,323
Warren, J. M		4,868
Wheeler & Co.	564	27,124
Whittemore & Co.	147	14,163
Wolff & Reesing		2,077
Wright, Peter & Co.		227
Total	42,262	1,880,281
Corres. date, 1889.	30,359	1,777,670

Pig Iron.	Tons.	Tons.
Abbott & Co., Jere.		250
Baldwin & Co., A.		807
Baldwin Bros. & Co.		170
Crocker Bros.		1,515
Crooks & Co., R.		5
Dana & Co.		150
Drummond & Co		400
Geisenheimer & Co		76
Hagermeyer & Brun		30
Henderson Bros.		100
Irvin. R. I. & Co		400
Lillienberg, N.		2,409
Naylor & Co		150
Perry & Reyer		53
Pierson & Co		30
Sheldon, G. W. & Co.		200
Stetsson & Co., G. W.	100	2,525
Williamson, J. & Co.	100	1,800
Total	209	11,070
Corres. date, 1889.	600	25,297

Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Abbott & Co.		233
Baldwin Bros. & Co.		2
Dana & Co.		1,670
Dolge & Co., A.		1
Downing, R. F. & Co.		109
Henderson Bros.		1
Holt & Co., H, N.		4
Martin & Co		80
Milne, A., & Co.		225
Naylor & Co.	50	1,446
Pope, Jas. E., Jr.		61
Richards & Co., C. B.		1
Roebling's Sons, J. A.		2,074
Wolff, & Co., R. H.		60
Total	50	5,967
Corres. date, 1889.	880	22,079

Bar Iron.	Tons.	Tons.
Abbott & Co., Jere.		796
Bacon & Co.		1,155
Crocker Bros.		77
Dickerson, Van Dusen & Co.		6
Downing & Co.		285
E. J. Jacobus.		104
Fuller, Dana & Fitz.		11
Holt, H. N.		230
Lillienberg, N.		468
Lundberg, G.		2,411
Milne & Co.		1,189
Muller, Schall & Co.	5	294
Naylor & Co.	45	649
Page, Newell & Co.		1,855
Plenty, J.		14
Wilson, J. G.		3
Total	50	9,547
Corres. date, 1889.		8,909

Scrap Iron.	Tons.	Tons.
Baldwin Bros. & Co.		7
Crossman & Co., W. H.		30
Frankfort, M.		347
Leary, D.		27
McDougall & Potter.		92
Muller, Schall & Co.		18
Pierson, C. L.		101
Samper & Co., S.		186
Stevens, Corvin & Co.		30
Ward, J. E. & Co.		737
Total		1,575
Corres. date, 1889.		2,866

Steel and Iron Rods.	Tons.	Tons.
Abbott & Co.	50	8,767
American S. Co.		765
Bacon & Co.		469
Bunnell & Co., J. H.		50
Carey & Moen.	25	501
Cooper, Hewitt & Co.		371
Dana & Co.		1,196
Dodge & Co., A.		3
Downing & Co.		129
Galpin, S. A.	35	1,241
Greely & Co. E. S.		35
Hazard Mfg. Co.	25	476
Holt & Co., H. N.		3
Jacobus, E. Y.		2
Lee, James & Co.		1,682
Lillienberg, N.		300
Lundberg, G.		126
Lundell, C. G.		5
Milne & Co.		1,548
Muller, Schall & Co.		850
Naylor & Co.		5,747
Page, Newell & Co.	85	1,314
Roebling's Sons, J. A.	130	2,567
Schulze & R.		1
Taylor, N. L.		16
Temple & Lockw'd		6
Wessel & Co.		21
Wiebusch & Ho.		4
Wood & Niebuhr.		25
Wolf & Co., R. H.	110	3,232
Total	350	31,452
Corres. date, 1889.	813	37,005

Old Rails.	Tons.	Tons.
Bowring & Archibald		340
Dana & Co.		764
Frankfort, M.		7,515
Henderson Bros.		300
Hernsheim, L		350
Mosle Bros.		123
Naylor & Co.	625	2,849
Sawyer, Wallace & Co.		610
West, H.		398
Wiechers, J. F.		150
Total	625	13,399
Corres. date, 1889.		10,127

Spiegeleisen.	Tons.	Tons.
Abbott, Jere & Co.		2,725
American Metal Co.		100
Blakely & McLellan		1,684
Crocker Bros.	508	22,154
Crooks & Co. R.		106
Dana & Co.		15,925
Foley, F.		50
Geisenheimer & Co.		728
Henderson Bros. & Co.		14
Hernsheim, L.		18,452
Holt, H. N.		200
Irvin & Co., R. L.		50
Naylor & Co.	550	11,198
Perkins, C. L.		1,152
Sachs & Richmond.		2
Whittemore, H. & Co.		55
Total	1,058	74,895
Corres. date, 1889.	1,821	64,960

Iron Ore.	Tons.	Tons.
Baiz, Jacob		67
Bergen Point Chemical Co.	550	2,550
Bowring & Archibald		5,292
Earnshaw, A.	157	3,674
Ennis, Andrew		438
Flores & Co., R. de		14,143
Johnson & Co., L.		5,030
Total	707	31,194
Corres. date, 1889.		8,660

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co., Jere.		2,545,103
Amer. Met. Co., L.		940,385
Barber & Co		13,750
Belmont, Aug. & Co		1,768,974
Boker, C. F.		117,000
Burgass & Co.		227,290
French, Edye & Co.		135,374
Heidelbech, Sicheimer & Co		672,608
Lewisohn Bros.	22,388	248,978
Muller, Schall & Co.		16,250
Paulsen, Wm.	50,000	50,000
Sawyer, W'l'ce & Co.		22,795
Seamen, S. H.		66,950
Ward, J. E. & Co.		100,000
Wiechers, J. F		29,97"
Wil'ms & T'hune.		112,004
Total	72,388	7,037,439
Corre. date, 1889.	849,633	8,765,694

Copper Matte.	
American Metal Co	3,072,079
Lewisohn Bros.	847,317 4,784,496
Nichols, Geo. H.	267,202
Paulsen, Wm.	1,039,428
Wil'ms & T'hune.	2,848,706
Total	847,317 12,011,911
Corres. date 1889.	348,618 24,930,645

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and Amount of last			Dividends. Total paid.	Dividends. Date & amount of last.		
1	Adams, s. L.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887 .10
2	Alice, s. C.	Mont.	10,000,000	400,000	25	*				850,000	July.	1890 .06¼
3	Alma&Nel Wood C.,g	Idaho	300,000	30,000	10	*				60,000	Jan.	1889 .50
4	American & Nettie,c.	Colo.		300,000						150,000	Nov.	1889 .10
5	Amy & Silversmith,s.	Mont.		341,419						247,530	Aug.	1887 .12½
6	Atlantic, c.	Mich.	1,000,000	40,000	25	$280,000	April	1875	$1.00	660,000	Aug.	1890 1.00
7	Argenta, s.	Nev.	10,000,000	100,000	100	335,000	July.	1889	.10	40,000	Feb.	1890 .20
8	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*				520,000	Oct.	1890 .10
9	Aurora, L.	Mich.	2,000,000	100,000	20					155,000	Oct.	1887 1.87½
10	Badger, s.	Ont.	250,000	50,000	5					37,500	Mar.	1890 .25
11	Bassick, G. S.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884 1.00
12	Belle Isle, s.	Nev.	10,000,000	100,000	100	190,000	Dec.	1889	.15	300,000	Dec.	1879 .25
13	Belcher, G. S.	Nev.	10,400,000	104,000	100	2,978,000	June	1890	.50	15,397,000	April	1876 1.00
14	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	120,000	Dec.	1889	.25	200,000	Jan.	1887 .10
15	Bi-Metallic, s.	Mont.	5,000,000	200,000	25					150,000	Sept.	1890 .25
16	Bodie Con., G. S.	Cal.	10,000,000	100,000	100	575,000	Nov.	1889	.25	1,602,572	April	1885 .50
17	Boston & Mont., G.	Mont.	2,500,000	250,000	10	*				520,000	June	1886 1.15
18	Boston & Mont., C. S.	Mont.	2,500,000	100,000	25	*				1,450,000	Aug.	1890 .50
19	Breece, s.	Colo.	5,000,000	200,000	25	*				2,000	Feb.	1880 .01
20	Brooklyn Lead, L. S.	Utah	500,000	50,000	10					127,000	July.	1887 .05
21	Bulwer, G.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175,000	Jan.	1884 .10
22	Bunker Hill & Sull.	Idaho	3,000,000	300,000	10	*				150,000	Oct.	1883 .06⅔
23	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	194,000	Oct.	1890 .08
24	Calliope, s.	Colo.	1,000,000	1,000,000						90,000	April	1890 .01
25	Calumet & Hecla, C.	Mich.	2,500,000	100,000	25	1,200,000				34,350,000	May	1890 5.00
26	Carbonate Hill, S. L.	Colo.	1,500,000	200,000	10	*				80,000	April	1884 .05
27	Carlisle, G.	N. M.	1,000,000	200,000	5					175,000	Dec.	1888 .12½
28	Castle Creek, G.	Idaho	100,000	100,000	1					51,000	Oct.	1883 .03
29	Catalpa, s. L.	Colo.	3,000,000	300,000	10	*				270,000	May	1884 .10
30	Central, C.	Mich.	500,000	20,000	25	100,000	Oct.	1861	.65	1,950,000	Feb.	1890 1.00
31	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884 .25
32	Colorado Central, s.L.	Colo.	2,750,000	275,000	10	*				406,250	Aug.	1889 .05
33	Confidence, s. L.	Nev.		24,960		328,880	May	1890	.75	199,680	April	1889 1.00
34	Cons. Cal. & Va., G. S.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	3,466,800	April	1890 .25
35	Contention, s.	Ariz.	12,500,000	250,000	50					12,387,500	Dec.	1884 .25
36	**Cop. Queen Con., C.	Ariz.	1,400,000	140,000	10					210,000	Feb.	1889 .50
37	Crescent, s. L. G.	Utah	15,000,000	600,000	25	*				228,000	Oct.	1888 .03
38	Crown Point, G. S.	Nev.	10,000,000	100,000	100	2,425,000	Sept.	1889	.50	11,588,000	Jan.	1875 2.00
39	Daly, S. L.	Utah	3,000,000	150,000	20					1,612,500	Aug.	1890 .25
40	Deer Creek, S. G.	Idaho	1,000,000	200,000	5	*				20,000	June	1889 .05
41	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*				$1,000,000	Nov.	1887 .10
42	Derbee B. Grav., G. S.	Colo.	10,000,000	100,000	100	90,000	Dec.	1881	.10	230,000	May	1890 .10
43	Dunkin, s. L.	Colo.	5,000,000	200,000	25	*				390,000	Oct.	1889 .05
44	Dunstone, G. S. L.	Mont.	1,000,000	200,000	5	*				6,000	Nov.	1888 .03
45	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887 .10
46	Elkhorn, G. S.	Mont.	1,000,000	100,000	10	50,000	July.	1883	.50	850,000	July.	1887 .05
47	Empire Lt., G.	Mont.	500,000	100,000	5					70,500	Oct.	1887 .37½
48	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	550,000	June	1889	.50	4,892,500	Nov.	1890 .25
49	Evening Star, S. L.	Colo.	500,000	50,000	10	*				1,458,000	Dec.	1889 .25
50	Excelsior, G.	Cal.	10,000,000	100,000	100	560,000	Sept.	1885	1.00	875,000	Oct.	1890 .25
51	Father de Smet, G.	Dak.	10,000,000	100,000	100	200,000	Nov.	1878	1.00	1,125,000	Dec.	1885 .20
52	Franklin, C.	Mich.	1,000,000	40,000	25	220,000	June	1871		960,000	Jan.	1889 2.00
53	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*				190,000	July.	1886 .10
54	Garfield Lt., G. S.	Nev.	500,000	100,000	5					95,000	April	1886 .12½
55	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	3,988,800	Sept.	1890	.25	2,826,000	Oct.	1870 10.00
56	Grand Prize, S.	Nev.	10,000,000	100,000	100	785,000	Jan.	1890	.30	525,000	Jan.	1890 .30
57	Granite, s. L.	Idaho	500,000	500,000	1	*				28,400	Oct.	1889 .02
58	Granite Mountain, s.	Mont.	10,000,000	400,000	25					9,200,000	July.	1890 .50
59	Green Mountain, G.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881 .07½
60	Hale & Norcross, G. S.	Nev.	11,200,000	112,000	100	5,142,800	April	1890	.50	1,162,000	July.	1888 .50
61	Hecla Con., S. G. L. C.	Mont.	1,500,000	30,000	50					1,500,000	April	1889 .50
62	Hel'a Mg.& Red, G.S.L.	Mont.	3,315,000	663,000	5	*				197,979	July.	1886 .06
63	Holmes, s.	Nev.	10,000,000	100,000	100	370,000	May.	1890	.25	75,000	April	1886 .25
64	Holyoke, G.	Idaho	200,000	200,000	1					27,000	Feb.	1883 .10
65	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July.	1878	1.00	5,581,250	Aug.	1890 .10
66	Honorine, S. L.	Utah	500,000	250,000	2	37,500	April	1889	.05	125,000	Sept.	1887 .05
67	Hope, s.	Mont.	1,000,000	100,000	10	*				233,225	April	1886 .25
68	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,150,000	June	1890 .12½
69	Hubert, G.	Colo.	1,000,000	1,000,000	1	*				247,000	Dec.	1889 .00½
70	Idaho, G.	Cal.	310,000	3,100	100					5,235,900	Dec.	1889 5.00
71	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886 .05
72	Illinois, s.	N. M.	100,000	100,000	1	*				45,000	April	1889 .20
73	Independence, s.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept.	1879 .25
74	Iron Hill, s.	Dak.	2,500,000	250,000	10	134,000	July.	1889	.03	156,250	Nov.	1887 .07½
75	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*				2,500,000	April	1889 .20
76	Jackson, G. S.	Nev.	5,000,000	50,000	100	237,500	Nov.	1880	.20	55,000	June	1889 .10
77	Jay Gould.	Mont.	2,000,000	40,000	5	*				459,000	May	1890 .04
78	Jocuistita, L.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885 .50
79	Jumbo, G.	Colo.	2,000,000	200,000	10					35,000	Oct.	1887 .02½
80	Kearsarge, C.	Mich.	1,250,000	50,000	25	190,000	Oct.	1887	1.00	100,000	Jan.	1890 2.00
81	Kentuck, G.	Nev.	3,000,000	30,000	100	406,980	Aug.	1890	.30	1,350,000	April	1890 .10
82	La Platta, S. L.	Colo.	2,000,000	200,000	10	*				610,000	Sept.	1882 .30
83	Leadville Con., S. L. L.	Colo.	4,000,000	400,000	10	*				4,423,000	April	1889 .05
84	Lexington, G. S.	Mont.	4,000,000	40,000	100	*				609,000	Jan.	1885 2.00
85	Little Chief, S. L.	Colo.	10,000,000	200,000	50	*				810,000	Jan.	1890 .05
86	Little Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*				1,050,000	Mar.	1888 .50
87	Little Rule	Utah	500,000	50,000	10					30,000	June	1890 .02
88	Mammoth	Utah	10,000,000	400,000	25					480,000	Aug.	1890 .10
89	Martin White, s.	Nev.	10,000,000	100,000	100	1,200,000	Feb.	1890	.25	140,000	Dec.	1886 .25
90	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*				175,000	May	1888 5.00
91	Matchless, s.	Colo.	500,000	500,000	1	*				15,000	Feb.	1890 .00½
92	May Mazeppa	Colo.	1,000,000	100,000	1					50,000	Oct.	1890 .01
93	Minnesotta, C.	Mich.	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar.	1876
94	Mono, G.	Cal.	5,000,000	50,000	100	760,000	Sept.	1890	.25	12,500	Mar.	1886 .25
95	Montana, Lt., G. S.	Mont.	3,300,000	660,000	5	*				2,489,675	Oct.	1890 .06
96	Morning Star, S. L.	Colo.	1,000,000	100,000	10					850,000	Dec.	1889 .20
97	Moulton, S. G.	Mont.	2,000,000	400,000	5	*				380,000	Dec.	1887 .07½
98	Mount Pleasant, G.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887 .30
99	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	June	1880	2.00	160,000	Oct.	1889 .20
100	Napa, Q.	Cal.	700,000	100,000	7	*				370,000	July.	1890 .10
101	Navajo, G.	Nev.	10,000,000	100,000	100	500,000	April	1890	.15	365,000	April	1889 .10
102	New Guston, s.	Colo.	500,000	100,000	5					337,500	April	1890 .50
103	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885 .06¼
104	Northern Belle, s.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	April	1885 .50
105	North Belle Isle, s.	Nev.	10,000,000	100,000	100	395,000	April	1890	.20	230,000	May	1888 .50
106	North Star, G.	Cal.	1,000,000	100,000	10					250,000	Dec.	1889 .50
107	Ontario, s.	Utah	15,000,000	150,000	100					11,225,000	Aug.	1890 .10
108	Ophir, G. S.	Nev.	10,000,000	100,000	100	4,210,640	April	1890	.50	1,595,800	July.	1882 1.00
109	Original, S. C.	Mont.	1,500,000	60,000	25	*				123,000	July.	1886 .05
110	Oro	Colo.	500,000	100,000	5					60,000	June	1890 .20
111	Osceola, C.	Mich.	1,250,000	50,000	25	480,000	April	1876	1.60	1,372,500	Sept.	1890 1.00
112	Oxford, G.	N. S.	125,000	125,000	1	*				78,500	Sept.	1886 .02
113	Paradise Valley, G. S.	Nev.	10,000,000	100,000	100	57,000	April	1888	.15	250,000	April	1887 .10
114	Parrot, C.	Mont.	1,800,000	180,000	10					696,000	Sept.	1890 .10
115	Peacock, S. G. C.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886
116	Plumas Eureka, G.	Cal.	1,406,250	140,625	10					2,548,046	Oct.	1889 .37½
117	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886 .10
118	Plymouth Con., G.	Cal.	5,000,000	100,000	50	*				2,289,000	Feb.	1888 .40
119	Quicksilver, pref., Q.	Cal.	4,300,000	43,000	100					1,705,791	Aug.	1890 1.50
120	" com., Q.	Cal.	5,700,000	57,000	100					693,867	July.	1882 .40
121	Quincy, C. S.	Mich.	1,000,000	40,000	25	200,000	Dec.	1862		5,570,000	Aug.	1890 5.00
122	Republic, C.	Mich.	5,000,000	100,000	50	400,000	Dec.	1889	.30	4,312,587	June	1887 1.25
123	Richmond, S. L.	Nev.	1,350,000	54,000	25	*				99,785	Feb.	1880 .50
124	Ridge, C.	Mich.	500,000	23,000	25	219,939	Mar.	1886	.50	585,000	Mar.	1886 .05
125	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*				100,000	Dec.	1882 .50
126	Robert E. Lee, S. L.	Colo.	10,000,000	200,000	20					4,460,000	July.	1869 3.00
127	Savage, S.	Nev.	11,200,000	112,000	100	6,604,000	Nov.	1889	.50	7,500	April	1883 .01
128	Shoshone, G.	Idaho	150,000	150,000	1					1,568,145	April	1888 .12½
129	Sierra Buttes, G.	Cal.	2,225,000	122,500	10					102,000	Jan.	1871 1.00
130	Sierra Nevada, G. S.	Nev.	10,000,000	100,000	100	6,296,910	May	1890	.50	270,000	April	1889 .10
131	Sierra Nevada, S. L.	Idaho	1,000,000	1,000,000	1	*				40,000	May	1889 .02
132	Silver Cord, G. S. L.	Colo.	4,500,000	450,000	10					270,000	April	1889 .10
133	Silver King, S.	Utah	10,000,000	100,000	100	130,000	Sept.	1890	.30	1,850,000	July.	1887 .25
134	Silver Mg. of L. V.	N. M.	500,000	500,000	1					250,000	Oct.	1890 .05
135	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*				50,000	Jan.	1881 .25
136	Small Hopes Con., S.	Colo.	5,000,000	250,000	20	*				3,137,500	June	1889 .10
137	Spring Valley, G.	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	3,595,000	June	1888 .05
138	Standard, G. S.	Cal.	10,000,000	100,000	100	100,000	June	1890	.50	155,000	Nov.	1881 .05
139	Stormont, S.	Utah	500,000	50,000	10	*				844,000	Dec.	1887 .20
140	St. Joseph, L.	Mo.	1,500,000	150,000	10	*				9,000	April	1888 .02½
141	Swansea, G.	Colo.	600,000	60,000	10	*				100,000	Nov.	1881 .20
142	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	April	1885	3.00	1,670,000	Oct.	1890 4.00
143	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*				1,250,000	April	1882 .10
144	United Verde, C.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884 .10
145	Valencia, M.	N. H.	150,000	1,500	100	*				41,250	April	1886 2.50
146	Viola Lt., G. S.	Idaho	750,000	150,000	5					272,500	Oct.	1887 .37½
147	Ward Con., S. L.	Colo.	2,000,000	200,000	10					20,000	Dec.	1889 .05
148	Yankee Girl.	Colo.	2,500,000	250,000	10					1,275,000	July.	1887 .10
149	Yellow Jacket, G. S.	Nev.	12,000,000	120,000	100	5,508,000	Mar.	1888	.50	2,148,000	Aug.	1871 1.50
150	Weeb City, L. Z.	Mo.	55,000	11,000	5					4,400	July.	1889 .10
151	Woodside	Utah								25,000	Oct.	1889 .25
152	Young America	Cal.								175,000		1889 .10

NON-DIVIDEND PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and am't of last.		
1	Agassiz Cons., s. L.	Colo.	$2,500,000	50,000	$50	*		
2	Allegheny, s.	Colo.	5,000,000	500,000	10			
3	Allouez, C.	Mich.	2,000,000	80,000	25	$737,000	Jan.	1890 .70
4	Alpha Con., G. S.	Nev.	3,000,000	30,000	100	112,500	Sept.	1890 .25
5	Alta, s.	Nev.	10,080,000	100,800	100	3,359,800	Sept.	1890 .50
6	Amador, G.	Cal.	400,000	200,000	2	*		
7	American Flag, s.	Colo.	1,250,000	125,000	10	300,000	June	1887
8	Amity, s.	Colo.	250,000	250,000	1			
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	5			
10	Astoria, G.	Cal.	200,000	100,000	2			
11	Barcelona, G.	Nev.	5,000,000	200,000	25	*		
12	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500	Jan.	1883 .10
13	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	April	1886 .10
14	Best & Belcher, G. S.	Nev.	10,080,000	100,800	100	2,279,275	Aug.	1890 .25
15	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*		
16	Black Oak, G.	Cal.	3,000,000	300,000	10	*		
17	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000	Nov.	1883 .25
18	Bremen, s.	N. M.	5,000,000	500,000	10	*		
19	Brownlow, s.	Colo.	250,000	250,000	1			
20	Brunswick, G.	Cal.	2,000,000	400,000	5	*		
21	Bullion, G. S.	Nev.	10,000,000	100,000	100	2,790,000	Dec.	1889 .25
22	Calaveras, G.	Cal.	500,000	500,000	1	*		
23	Carisa, G.	Wy.	500,000	100,000	5	*		
24	Carupano, G. S. L. C.	Ven.	300,000	100,000	2	*		
25	Cashier, G. S.	Colo.	500,000	250,000	2	*		
26	Charles Dickens, G. S.	Idaho	1,250,000	250,000	5	*		
27	Cherokee, G.	Cal.	1,500,000	150,000	10			
28	Chollar, s.	Nev.	11,200,000	112,000	100	1,540,000	Nov.	1889 .50
29	Cleveland, T.	Oak.	1,000,000	500,000	2	*		
30	Colchis.	N. M.	500,000	50,000	10			
31	Commonwealth, s.	Nev.	10,000,000	100,000	100	170,000	Nov.	1888 .50
32	Comstock, G. S.	Nev.	10,000,000	100,000	100	35,000	Mar.	1887 .15
33	Con. Imperial, G. S.	Nev.	5,000,000	50,000	100	1,875,000	July.	1890 .05
34	Con. Pacific, G.	Cal.	6,000,000	60,000	100	198,000	June	1890 .10
35	Corsica, G.	Mex.	2,500,000	250,000	10			
36	Crescent, s. L.	Colo.	3,000,000	300,000	10	*		
37	Crocker, s.	Ariz.	10,000,000	100,000	100	150,000	June	1890 .15
38	Crowell, G.	N. C.	500,000	500,000	1	*		
39	Dahlonega, G.	Ga.	250,000	250,000	1	*		
40	Dandy, s.	Colo.	5,000,000	500,000	10			
41	Decatur, s.	Colo.	1,500,000	300,000	5	*		
42	Denver City, S. L.	Colo.	5,000,000	500,000	10	*		
43	Denver Gold, G.	Colo.	300,000	60,000	5			
44	Durango, G.	Colo.	500,000	500,000	1	*		
45	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886 1.00
46	El Cristo, G. S.	U.S.C.	1,000,000	500,000	2			
47	El Dorado, G.	Cal.	1,000,000	250,000	4	*		
48	El Fuente, G.	U.S.C.	1,000,000	500,000	2			
49	Empire, S.	Utah	10,000,000	100,000	100			
50	Eureka Tunnel, S. L.	Nev.	10,000,000	100,000	100	*		
51	Exchequer.	Nev.	10,000,000	100,000	100	865,000	July.	1890 .25
52	Found Treasure, G. S.	Nev.	10,000,000	100,000	100	81,500	May	1890 .25
53	Gogebic I. Syn., I.	Wis.	5,600,000	200,000	25			
54	Gold Cup, s.	Colo.	500,000	500,000	1	*		
55	Golden Era, S.	Mont.	2,000,000	200,000	10	*		
56	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314	Dec.	1885 .25
57	Gold Rock, G.	Cal.	1,000,000	500,000	2	*		
58	Goodshaw, G.	Cal.	10,000,000	100,000	100	*		
59	Grand Belt, C.	Tex.	12,000,000	120,000	100			
60	Grand Duke.	Colo.	800,000	80,000	10			
61	Great Bemance, G.	U.S.C.	1,000,000	500,000	2	*		
62	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*		
63	Gregory Con., G.	Mont.	3,000,000	300,000	10			
64	Hariem M. & M. Co., G.	Cal.	1,000,000	200,000	5			
65	Head Cent. & Tr., S. G.	Ariz.	10,000,000	100,000	100			
66	Hector, G.	Cal.	1,500,000	300,000	5	45,000	Jan.	1889 .15
67	Highland, C.	Mich.	500,000	25,000	20			
68	Hollywood.	Cal.	200,000	200,000	1			
69	Hortense, s.	Colo.	2,000,000	200,000	10			
70	Huron, C.	Mich.	1,000,000	40,000	25	280,000	May	1887 3.00
71	Iron, Gold & Silver, s.	N. M.	2,000,000	200,000	10	*		
72	Ironton, I.	Wis.	1,000,000	40,000	25			
73	Iroquois, C.	Mich.	1,250,000	50,000	25			
74	Iron Silver, C.	Ariz.	10,000,000	100,000	100			
75	Julia Con., G. S.	Nev.	11,000,000	110,000	100	1,463,000	Jan.	1889 .10
76	Lacrosse, G.	Colo.	1,000,000	100,000	10	*		
77	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*		
78	Mayflower Gravel	Cal.	1,000,000	100,000	10	585,000	Mar.	1890 .56
79	Medora, G.	Dak.	250,000	250,000	1			
80	Mexican, G. S.	Nev.	10,000,000	100,000	100	2,766,960	May	1890 .25
81	Middle Cal.	Colo.	400,000	200,000	2	*		
82	Mike & Starr, S. L.	Colo.	1,000,000	200,000	5	*		
83	Mollie Gibson	Colo.	2,000,000	100,000	2	*		
84	Monitor, G.	Colo.	100,000	1,000,000	1	*		
85	Mutual Mg. & Sm.	W'sh.	100,000	100,000	1	*		
86	Native, C.	Mich.	1,000,000	40,000	25			
87	Neath, G.	Colo.	1,000,000	100,000	10			
88	Nevada Queen, s.	Nev.	10,000,000	100,000	100	200,000	Oct.	1889 .25
89	New Germany, G.	N. S.	100,000	100,000	1	*		
90	New Pittsburg, S. L.	Colo.	2,000,000	200,000	10	*		
91	N. Commonw'h, S.	Nev.	10,000,000	100,000	100	85,000	April	1890 .25
92	North Standard, G.	Cal.	10,000,000	100,000	100	20,000	Nov.	
93	Noonday.	Cal.	600,000	60,000	10	208,000	Dec.	1881 .10
94	Oneida Chief, G.	Cal.	500,000	125,000	100	*		
95	Oriental & Miller, s.	Nev.	10,000,000	400,000	25			
96	Osceola, G.	Nev.	5,000,000	500,000	10	*		
97	Overman, G. S.	Nev.	11,520,000	115,200	100	3,832,800	Dec.	1889 .25
98	Park, s.	Utah	2,000,000	200,000	10			
99	Peer, s.	Ariz.	10,000,000	100,000	100	165,000	Aug.	1890 .10
100	Peerless, s.	Ariz.	10,000,000	100,000	100	405,000	Aug.	1890 .15
101	Phenix.	Ariz.	500,000	500,000	1	*		
102	Phenix, G. S.	Ark	5,000,000	200,000	25	*		
103	Phœnix Lead, S. L.	Colo.	100,000	100,000	1	*		
104	Pilgrim, G.	Cal.	600,000	300,000	2	*		
105	Potosi, s.	Nev.	11,200,000	112,000	100	1,573,000	Mar.	1890 .50
106	Proustite, s.	Idaho	250,000	250,000	1	*		
107	Providence, S. G.	Colo.	1,500,000	150,000	10	*		
108	Quincy.	Colo.	3,000,000	300,000	10			
109	Rappahannock, G. S.	Va.	250,000	250,000	1	*		
110	Red Elephant, S.	Colo.	500,000	500,000	1	*		
111	Ropes, G. S.	Mich.	2,000,000	80,000	25	147,200	July.	1887 .50
112	Russell, G.	N. C.	1,500,000	300,000	5			
113	Sampson, G. S. L.	Utah	10,000,000	100,000	100	288,157	July.	1888 1.08
114	San Bernardino, G.	San S.	1,600,000	320,000	5	*		
115	Santa Fe, C.	N. M.	5,000,000	500,000	10			
116	Santiago, G.	U.S.C.	400,000	200,000	2	*		
117	Security, S.	Colo.	10,000,000	1,000,000	10			
118	Sheridan.	N. M.	2,000,000	200,000	10			
119	Silver Queen, C.	Ariz.	5,000,000	200,000	25	*		
120	South Bulwer, G.	Cal.	600,000	100,000	100	100,000	May	1881 .25
121	South H

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Oct. 4. H.	Oct. 4. L.	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.	Oct. 9. H.	Oct. 9. L.	Oct. 10. H.	Oct. 10. L.	Sales.
Alice									2.00				300
Argenta, Mich													
Aspen, Colo	6.50								6.50				500
Belcher, Nev													
Belle Isle													
Bodie Cons., Cal					1.70								100
Bos. & Mont., Mont													
Breece, Colo													
Bulwer, Cal													
Caledonia			1.75	1.70			1.70						300
Calumet & Hecla, Mich			300										400
Catalpa, Colo													
Chrysolite, Colo											.30		1,200
Confidence, Nev													
Cons. Cal. & Va., Nev			4.75		4.95								400
Crown Point, Nev							2.95				2.95		150
Deadwood, Dak													
Dunkin, Colo			.60										800
Eureka Con													
Father de Smet, Dak													
Franklin			20.00										50
Freeland, Colo	.36		.35										1,200
Gould & Curry, Nev	2.35				2.35								200
Hale & Norcross, Nev													
Holyoke													
Homestake, Dak			10.75	10.13							10.00		250
Horn-Silver, Utah	3.35		3.35		3.30	3.25	3.25		3.30	3.25	3.35		2,950
Independence, Nev													
Iron Hill, Dak													
Kearsarge	17.38												100
Leadville C., Colo			.15		.17		.17		.15				3,500
Little Chief, Colo	.40						.45						1,100
Mono, Cal	.70												200
Moulton, Mont													
Mt. Diablo, Nev													
Navajo, Nev													
N. Belle Isle, Nev													
Ontario, Utah			46.75								45.75	45.25	177
Ophir, Nev			5.13		5.50		5.25				5.38		350
Osceola, Mich													
Plymouth, Cal	2.00						2.10	2.00			2.00		500
Quicksilver, Pref	40.50	40.00											200
" Com													
Quincy, Mich	117⅝												40
Robinson Cons., Colo					.40								400
Savage					4.35	4.25							200
Sierra Nevada, Nev			3.00				3.00						200
Silver Cord					.40				.40				1,800
Silver King, Ariz			.15								.15		300
Silver Mg. of L. V													
Small Hopes					.95								200
Standard			1.00								1.35		150
Stormont, Utah													
Tamarack, Mich													
Yellow Jacket, Nev									3.60				200

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Oct. 4. H.	Oct. 4. L.	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.	Oct. 9. H.	Oct. 9. L.	Oct. 10. H.	Oct. 10. L.	Sales.
Alpha, Nev													
Alta, Nev			1.75		1.70						1.70		350
American Flag, Colo													
Andes, Nev													
Amador, Cal													
Astoria, Cal	.06	.05	.05								.05	.05	5,000
Barcelona, Nev			.23						.24				1,300
Best & Belcher, Nev	3.85		3.80										300
Bonanza King, Cal													
Brunswick, Cal	.09	.08	.08	.07					.08	.07	.08	.07	30,100
Bullion, Nev													
Butte & Bost., Mont													
Castle Creek, Idaho													
Challar, Nev	3.40		3.40		3.60						3.00	3.85	500
Col. & Beaver, Idaho													
Commonwealth, Nev													
Comstock T., Nev													
" bonds									.22				1,000
" scrip													
Con. Imperial, Nev													
Crescent, Colo													
Denver City, Colo													
El Cristo, Rep. of Col	.80		.75		.80								500
Exchequer													
Hollywood, Cal													
Huron, Mich	5.50												100
Julia, Nev	.35				.35		.36		.40		.40		1,200
Kingston & Pembroke													
Kossuth													
Lacrosse, Colo													
Lee Basin, Colo													
Mexican, Nev	3.45		3.50		3.60		3.50				3.45		600
Monitor					.03								200
Mutual Sm. & Mg. Co	1.50		1.50		1.45		1.45				1.45		1,300
Nevada Queen, Nev													
N. Commonwealth, Nev													
Occidental, Nev					2.10								100
Oriental & Mil., Nev													
Overman, Nev													
Phœnix of Ariz	.96	.88	.95	.88	.95	.92	.95	.93	.90	.89	.95	.93	12,800
Phœnix Lead, Colo							.14						200
Potosi			7.00								7.63		200
Rappahannock, Va			.06										1,000
Santiago, U. S. C													
S. Sebastian			.50										100
Scorpion											.40		300
Shoshone													
Silver Hill											.45		200
Silver Queen													
Sullivan Con., Dak													
Sutro Tunnel, Nev							.12				.12	.12	7,600
Sutter Creek, Cal	1.35		.11		1.30						1.30	1.25	1,100
Union Cons., Nev			1.35		3.00						3.15	3.00	300
Utah, Nev	1.25				1.35						1.15	1.15	1,600

*Ex. dividend. †Dealt in at the New York Stock Ex. Unlisted securities. ‡Assessment paid. §Assessment unpaid. Dividend shares sold, 17,467. Non-dividend shares sold, 67,880. Total, New York, 85,347.

BOSTON MINING STOCK QUOTATIONS.

Name of Company.	Oct. 3.	Oct. 4.	Oct. 6.	Oct. 7.	Oct. 8.	Oct. 9.	Sales.
Atlantic, Mich	21.50	22.50 21.25	21.50		21.00 20.75	20.50 19.50	536
Bodie, Cal							
Bonanza Development		.60					100
Bost. & Mont., Mont	55.75 55.50	55.00 54.25	55.00 54.25	55.00 53.75	52.75 52.25	52.50 50.25	2,982
Breece, Colo							
Calumet & Hecla, Mich	300	300	302	300	302 300	303½ 302	99
Catalpa, Colo		.40					100
Central, Mich							
Chrysolite, Colo							
Con. Cal. & Va., Nev							
Dunkin, Colo		.65	.75 .65	.63	.68		1,100
Eureka, Nev							
Franklin, Mich	21.00 20.00	20.00	21.00 20.13	20.50 19.75	20.75 19.75	19.63 19.50	1,040
Honorine, Utah							
Horn Silver, Utah							
Kearsarge				18.00 17.50	16.00	16.00	165
Little Chief, Colo							
Little Pittsburg, Colo							
Moulton							
Napa, Cal							
Ontario, Utah							
Osceola, Mich	42.00 41.00	41.50 41.00	41.00 40.50	41.25	42.00 40.75	40.75 40.00	2,857
Pewabic, Mich							
Quincy, Mich	117 115		115	114	115	115	65
Ridge, Mich		.63	1.00	1.25			800
Sierra Nevada, Nev							
Silver King							
Stormont, Utah							
Tamarack, Mich	195 191	194		194		192 190	105

Name of Company.	Oct. 3.	Oct. 4.	Oct. 6.	Oct. 7.	Oct. 8.	Oct. 9.	Sales.
Allouez, Mich	6.88 6.00	6.25	6.50	7.00 6.00	6.25 6.00	5.75	6,675
Arnold, Mich				1.50			200
Aztec, Mich							
Brunswick, Cal							
Butte & Boston, Mont		18.00 17.00	17.00	18.00	17.00	17.00 16.75	820
Centennial, Mich	24.00	23.00	22.50	23.00 21.75	22.00 20.00	20.50 20.00	1,346
Comstock, T., Nev							
Copper Falls Mg			6.00				100
Crescent, Colo				.15			2,500
Dana, Mich							
Don Enrique, N. M							
El Cristo, S. A							
Hanover, Mich							
Humboldt, Mich							
Hungarian, Mich							
Huron, Mich		5.00				5.00 4.75	600
Mesnard, Mich							
National, Mich		1.63					100
Native, Mich							
Oriental & M., Nev							
Phoenix							
Pontiac							
Rappahannock, Va							
Santa Fe, N. Mex			.55	.55		.55	1,600
Shoshone, Idaho							
South Side, Mich							
Star							
Washington, Mich							
Winthrop, Mich							

Boston: Dividend shares sold, 9,949. Non-dividend shares sold, 13,991. Total Boston, 23,940.

COAL STOCKS.

Name of Company.	Par val. of shares.	Oct. 4. H.	Oct. 4. L.	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Oct. 8. H.	Oct. 8. L.	Oct. 9. H.	Oct. 9. L.	Oct 10. H.	Oct 10. L.	Sales.
American Coal														
Cambria Iron														
Cameron Coal & I. Co														
Ches. & O. RR	100													
Chic. & Ind. Coal RR	100													
Do. pref	100													
Col. C. & I	100	45½		46½	45½	47	45	45½	43¾	45	44	45	44½	6,070
Col. & Hocking C. I.	100	24½		24⅝	24⅛	24⅝		24⅝	23	23¾	23	24	23⅞	4 500
Do. Pref	100			80										100
Del. & H. C	100	155⅝	155	155⅞	153½	154¼	153	155½	153⅜	154½	152⅞	155¼	153¾	3,269
D., L. & W. RR	50	144	143½	143⅞	141½	143⅞	143½	144	142⅛	142¾	140¾	144¾	142½	101,290
Hocking Valley	100	30⅝	30½	30¾	30	30¾	30⅜	30½	29⅝	29⅝	28¾	29¾	28⅝	10,496
Hunt. & Broad Top						23¼								20
Do. pref				47				47½		47	46¾			520
Illinois C. & Coke Co														
Lehigh C. & N	50			52	51⅞	51⅞		51⅞		51⅞	51			717
Lehigh Valley RR	50	51⅞		51⅞	51¾	52	51⅞	51⅞	51⅝	52	51½			857
Lehigh & Wilk. Coal	100													
Mahoning Coal	100													
Marshall Con. Coal	100													
Maryland Coal				14										300
Morris & Essex	100													
New Central Coal	50													
N. J. C. RR	100	115	114½	115	113⅞	115	114½	115		114¾	111	116	114	6,387
N. Y. & S. Coal	100													
N. Y., Susq. & West	100	6¾	6⅝	6½						6¾		6¼	6¼	711
Do. pref	100	28	27	27		28	27			27	25	27¼		1,265
N.Y. & Perry C. & I	100													
Norfolk & West. RR.	50	17½				17				17	16			620
Do. pref	50	59¾	59¼	58¾	58	58¾		59	58¾	58¼	58			1,560
Penn. Coal	50													
Penn. RR	50	52⅝	52¼	52⅝	52⅛	52¼	52⅛	52¼	52	52⅛	52			6,753
Ph. & R. RR		37⅝	36¾	38	36⅝	38¼	38	38	36¾	36⅞	34½	36⅝	35⅜	**161,303
Sunday Creek Coal														
Do. pref	100													
Tennessee C. & I. Co		43	41½	41	40	41¼	39½	40¾	39½	40¼	39	42¼	40	7,620
Do. pref						90	89	89	80			83	82	900
Westmoreland Coal														

**Sales in New York, 83,845; in Philadelphia, 75,458. Total sales, 318,261.

San Francisco Mining Stock Quotations.

Company.	Closing Quotations. Oct. 3.	Oct. 4.	Oct. 6.	Oct. 7.	Oct. 8.	Oct. 9.
Alpha						
Alta	1.60	1.65	1.60	1.60	1.65	1.60
Belcher						
Belle Isle	.90	.90	.90	.85		.90
Best & Bel	3.75	3.70	3.70	3.80	3.70	3.70
Bodie	1.60	1.65	1 60	1.50	1.45	1.85
Bulwer	.25	.25	.25	.25	.25	.35
Challar	3.30	3.30	3.50		3.55	3.75
Com'wealth	2.60	2.70	2.75	2.75	2.75	2.75
Con. C. & V	4.80	4.85	4.85	4.85	4.80	4.75
Con. Pac						3.75
Crown Point	2.80	2.80	2.85	2.90	2.80	2.85
Eureka C	4.00	4.00	4.00	4.00	4.25	4.75
Gould & C	2.25	2.15	2.25	2.25	2.20	2 20
Grand Prize						
Hale & N	2.30	2.30	2.35	2.30	2.10	2.20
M. White						
Mexican	3.35	3.45	3.45	3.45	3.35	3.35
Mono	.60	.60	.60	.55	.50	.75
Mt. Diablo		2.50			2.25	
Navajo	.30	.30	.35	.35	.35	.35
Nev. Queen	.85	.85	.85	.80	.80	.80
N. Belle Isle	1.00	.95	1.00	1 00	1.00	1.00
Occidental						
Ophir	5.13	5.13	5.25	5.13	5.13	5.13
Potosi	6 88	6.75	7.13	7.50	7.25	7.50
Savage	3.70	3.65	4.15	3.75	3.60	3.70
Sierra Nev	2.95	2.90	2.90	3.05	2.90	3.05
Union Con	2.90	2.90	2.90	3.10	3.02	2.95
Utah	1.15	1.15	1.30	1.20	1.05	1.05
Yellow Jak	3.35	3.40	3.40	3.45	3.40	3.40

STOCK MARKET QUOTATIONS.

Baltimore, Md.

Company.	Bid. L. H.	Asked. L. H.
Atlantic Coal	....	....
Balt. & N. C	.04@.05	.04@ 10
Big Vein Coal	....	1.20@1.30
Conrad Hill	....	.10
Cons. Coal	.26@.26½	.27½
Diamond Tunnel	....	....
George's Crk. C	1.10	1.15½
Lake Chrome	....	....
Maryland & Charlotte	....	....
North State	....	.20
Silver Valley	.50@.63	.55@.66

Prices bid and asked, lowest and highest, during the week ending Oct. 9.

Birmingham, Ala.

Company.	Bid. L. H.	Asked. L. H.
Ala. Coal & I. Co.	....	$100
Ala. Coal, C. & C. Co	....	$23
Ala. R. Mill Co.	$60	....
*Alice Furnace	$103	....
Anna Howe'l, Mg. Co	$⅞	$⅞
Bess'mer Land.	$ 3	$40
Bir. Mg. & M. g.	....	$65
Cahaba Coal Mg. Co	....	$70
Camille Gold Mg. Co	$½	....
De Bardeleben C. & I. Co	$33	$73
Decat. L. Imp.	$12¼	....
DecaturMin. L.	$15	$19
Ensley Land	$9¼	$10
*Eureka	**$99	$102½
Florence L. & Mg. Co	$20	$21
Gadsen Land	$4¼	$4¾
Hecla Coal Co.	$10	....
Hen. S. & M. Co	$50	$70
Jagger-Townl'y C. & C. Co	$8½	$10
Mag-Ellen	$100	....
Mary Lee C. & R. Co	....	$25
Sheffield C. & I. Co	$50	$55
Sloss I. & S.	....	$40
†Sloss I. & S.	$90	....
††Sloss I. & S.	....	$61
Tuscaloose C. I. & L. Co	$22	....
Tenn. C. & I. Co.	$41	$42
" pref.	$93	$97
Vulcan C. & C. Co	$5	....
Woodstock I. Co.	$23	$33

Prices, highest and lowest, bid and asked during week ending Oct. 6.
* Bonds. † First mortgage. †† Second mortgage. ** Without interest.

Pittsburg, Pa. Oct. 8.

Company.	B.	A.	Closing
Allegheny Gas Co	....	....	....
Bridgewater Gas Co.	$49.00@$52.00		$49.00
Chartiers Val. Gas	38.00	39.00	38.00
Columbia Oil Co	*2.50	*3.00	*2.88
Consolidated Gas Co.	....	....	....
East End E. Light Co.	....	....	....
East End Gas Co	....	....	....
Forest Oil	....	....	....
Hazlewood Oil Co	*50.00@*50.25		*50.00
La Noria Mining	.17	....	.17
Luster Mg. Co	*16.25	*19.00	*18.13
Mansfield C. & C. Co.	....	....	....
Manuf'turers Gas Co.	....	....	....
Nat. Gas Co. of W. Va	....	....	....
N. Y. & Clev. Gas Coal.	33.50	35.00	33.50
Ohio Valley Gas	15.00	....	15.00
Pennsylvania Gas	....	14.25	14.25
People's Natural Gas.	....	....	....
People's N. G. & P. Co.	*14.50	*15.38	*15.13
Philadelphia Co.	29.75	30.50	30.13
Pine Run Gas Co	....	....	....
Pittsburg Gas	....	....	....
Silverton Mg. Co.	1.50	....	1.50
South Side Gas.	....	....	....
Tuna Oil Co.	....	....	....
Union Gas.	....	....	....
Washington Oil Co.	....	....	....
W'house Brake Co	85.00	....	85.00
W'house A. B. Co	113.00	115.00	113.00
W'house E. Light	23.00	34.00	30.00
W'moreland & Camb.	....	....	....
Wheeling Gas	17.00	21.00	18.50
Yankee Girl Mg	3.50	....	3.50

* Actual selling price.

Prices bid and asked and sales during week ending Oct. 8:

Columbia Oil Co	100 shs.	@$30
Hazlewood Oil Co	56 "	@$50
Luster Mining	195 "	$17¼@18¾
People's N.G. & P. Co.	70 "	$15@$15¼
Philadelphia Gas Co.	397 "	$30@$30⅝
West. Electric	190 "	$29@$33¼

St. Louis. Oct. 8.

CLOSING PRICES.

Company.	Bid.	Asked.
Adams, Colo	$1.90	$1.97½
American & Nettie	1.02½	1.07½
Aztec, N. Mex	.07½	.09½
Bi-Metallic	33.50	35.00
Central Silver	.21¼	.22½
Cleveland, Colo	.05	.05½
Cleveland & An'r	.08	.08½
Coeur d'Alene	.95	....
Elizabeth	....	....
Gold King	.10	15
Granite Mountain, Mont.	48.00	50.00
Hope	....	....
I. X. L., Colo	....	....
La Union	.07½	.08
Little Albert	.31¼	.33¾
Montrose Placer, Colo.	.52½	.55
Major Budd, Mont	.06½	.07
Mexican Imp	.09	.12
Mickey Breen	1.50	1.55
Mountain Key	.46¼	.52½
Nellie	.45	.52½
Old Colony	.03	....
Pat Murphy, Colo	.13	.14
Puzzle	....	....
Richmond Hill	....	....
Samoa	....	....
Silver Age, Colo	2.00	2.25
Small Hopes, Colo	.92½	.96¼
Tourtelotte	.02½	.03
West Granite, Mont	1.02½	1.05
Wire Patch	.14½	.16¼
Yuma, Ariz	.43¾	.48¾

Trust Stocks. Oct. 10.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

Am. Cotton Oil. Tr. Repts	$19⅝@$20
Cattle Trust	@ 14
Distillers' & Cattle Feeders'	48 @ 48½
Linseed Oil	46¼@ 48
National Lead	19¾@ 19⅞
Standard Oil	165 @167
Sugar Refineries	76⅝@ 76¾

Sales at the New York Stock Exchange week ending Oct. 10:

	Sales.	Price H.	Price L.
*American Cotton Oil	3,220	21	18⅞
National Lead	5,319	20¾	19¼
Sugar	121,475	78¼	75⅝

* Trust receipts.

Foreign Quotations.

London. Sept. 27.

Company.	Highest.	Lowest.
Almada, Mex	1s. 6d.	1 .
Amador, Cal	£¾	£⅝ 3d.
Appalachian, N. C.	9d.	
Canadian Phos., Can	£½	£¼
Colorado, Colo	4s. 9d.	4 . 3d.
Comstock, Utah	....	....
Cordova	....	....
Cons. Esmeralda, Nev	3s. 3d.	2s. 9d.
Denver Gold, Colo	6d.	....
Dickens Custer, Idaho	1s. 6d.	1s.
East Arevalo, Idaho	2s.	1s.
El Callao, Venezuela	£2	£ ¾
Elmore, Idaho	2s. 6d.	2s.
Garfield, Nev	1s 6d.	6d.
Jay Hawk Mont	1s. 6d.	1s.
Josephine, Cal	1s. 6d.	6d.
Kohinoor, Colo	2s. 3d	1s. 9d.
La Luz, Mex	1s. 9d.	1s. 3d.
La Valera, Mex	25s.	20s.
Montana Lt., Mont	20s.	19s.
New California, Colo	6s. 9d.	6s. 6d.
New Consolidated	9d.	3d.
New Eberhardt, Nev	1s. 6d.	9d.
New Emma, S., Utah	5s. 3d.	4s. 9d.
New Flagstaff, Utah	....	....
Newfoundland, N. F	3s. 6d.	3s.
N. Gold Hill, N. C.	1s 3d.	9d.
New Guston, Colo	£4	£3½
New Hoover Hill, N. C.	1s. 3d.	9d.
Old Lout, Colo	£⅝	£⅜
Palmarejo, Mex	17s	16 .
Pinos Altos, Mex	£11-16	£⅝
Pittsburg Cons., Nev	9s.	8s.
Richmond Con., Nev	£1⅛	£⅞
Ruby & Dunderberg, Nev	1s. 6d.	1 .
Sam Christan, N. C	1s.	6d.
Sierra Buttes Cal	7s. 6d.	5s.
" Plumas Eur., Cal.	£¾	£⅝
Sonora Mex	1s.	6d.
United Mex can, Mex	8s.	7s.
U. S. Placer, Colo	1s. 3d.	9d.
Viola Lt., Idaho	2s.	1s. 6 .

Highest and lowest prices during the week ending Sept. 27.

Paris. Sept. 25.

	Francs.
Belmez, Spain	770.00
Callao, Venez	52 50
Callao Bis, Venez	6.50
East Oregon, Ore	6.75
Forest Hill Divide, Cal	95.00
Golden River, Cal	350.50
" " parts	30.00
Lexington, Mont	120 00
" parts	3.50
Rio Tinto, Spain	675.00
Tharsis, Spain	160 00

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs....$1.75@$2.00
Muriatic, 18°, ℔ 100 lbs .... 1.00@1.50
Muriatic, 20° ℔ 100 lbs.... 1.12½@1.75
Muriatic, 22° ℔ 100 lbs.... 1.37½@2.00
Nitric, 36°, ℔ 100 lbs.... 4.00@4.20
Nitric, 42°, ℔ 100 lbs.... 6.00@6.25
Oxalic, ℔ 100 lbs.... 6.50@10.50
Sulphuric, 60°, ℔ 100 lbs. 80@1.25
Sulphuric, 66°, ℔ 100 lbs. 1.00@1.75

Alkali—
Refined, 48 p. c @2¾
Refined, 58° 2¾@3
Alum—Lump, ℔ lb 1¾
Ground, ℔ lb 1¾@2
Lump ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton £4 10
Aqua Ammonia—18°, ℔ lb 4¾
20°, ℔ lb 6
22°, ℔ lb 6@7
26°, ℔ lb 10@11
Ammonia—Sul., ℔ 100 lbs. 3.15
Carb., per lb 7½@8½
Arsenic—White, powdered, ℔ lb. 3¼@3½
Red, ℔ lb 5¾@6¾
White, at Plymouth, ℔ ton £12 2 6d.
Asbestos—Am., p. ton $50@$300
Italian, p. ton, c. i. f. L'pool £18@£60
Asphaltum—F. ton 13.00
Prime Cuban, ℔ lb 4½@5½c.
Hard Cuban, ℔ ton $28.00
Trinidad, refined, ℔ ton $30.00
Barytes—Sulph., Am. prime white 17@20
Sulph., foreign, floated, p. ton 19½@21.50
Sulph., off color, p. ton 11.50@14.00
Carb., lump, f. o. b. L'pool, ton £6
No. 1, casks, Runcorn " " £4 10 0
No 2, bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb. 1.57½@1.80
Borax—Refined, ℔ lb. 9¼@9¾
Concentrated 7¾@8⅝
Refined, Liverpool, ℔ ton £29
Brimstone—*See Sulphur.*
Bromine—℔ lb. 37@38
Chalk—℔ ton 1.75
Precipitated, ℔ lb. 4¾@5
China Clay—English, ℔ ton 13.50@18.50
Southern, ℔ ton 13.50
Chrome Yellow—℔ lb 10@2
Cobalt—Oxide, ℔ lb. 2.60@2.90
Copper—Sulph. English Wks, ton £20@£21
Copperas—Common, ℔ 100 lbs. 70
Best, ℔ 100 lbs. 75@1.00
Liverpool, ℔ ton, in casks £1 15s.
Cream of Tartar—Am. 99% 22½
Powdered, 99 p. c. 23
Emery—Grain, ℔ lb 4½@5
Flour, ℔ lb 2¾@3½
Feldspar—Ground, ℔ ton 15.00
Fuller's Earth—Lump, ℔ bbl. .90@.95
Powdered, ℔ lb. 1⅞@2
Gypsum—Calcined, ℔ bbl. 1.25@1.50
Iodine—Resublimed 2.75
Kainit—℔ ton $9.75@$10
Kaolin—*See China Clay.*
Lead—Red, ℔ lb. 6¾@9
White, American, in oil, ℔ lb. 6¾@7¼
White, English, ℔ lb 8½@8¾
Acetate, or sugar of, white 12@13
Lime Acetate—Amer. Brown .95@1.00
" Gray 1.75@1.87½
Litharge—Powdered, ℔ lb. 6½@6¾
English flake, ℔ lb. 9@9½
Magnesite—Greek, ℔ ton 20.00
Manganese—Crude, per unit .23@.28
Oxide, ground, per lb 2½@6½
Mercuric-Chloride—(*Corrosive Sublimate*) ℔ lb. 70@72
Mineral Wool—℔ lb. 2
Mica—In sheets according to size, 1st quality, ℔ lb. .25@$6.00
Ochre—Yellow, "B. F.," ℔ ton, f. o. b. mill 30.00
"J. F. L. S.," ℔ lb. ex dock 2½
Phosphate Rock—S. Carolina, per ton f. o. b. Charleston 6.00@7.25
Ground, ex vessel New York 11 00
Canadian Apatite, lump, f. o. b. at Montreal, ℔ ton 16.00
Phosphorus—℔ lb. 70@75
Plumbago—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7
Potassium—Cyanide, ℔ lb. .39@40
Bromide, ℔ lb. 33
Chlorate, ℔ lb. 13@10
Carb. ℔ lb. 4.70@5.54
Caustic, ℔ lb. 7¼@8
Iodide .2.65@2.70
Muriate, ℔ 100 lbs. 1.77½@1.82½
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb 10½@11
Sulphate, ℔ 100 lbs. 2.30@2.35
Yellow Prussiate, ℔ lb. 17½@18
Red Prussiate, ℔ lb. 42@45
Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb. 1¾@2
Powdered, pure, ℔ lb. 2¼@2¾
Pyrites—Non-cupreous, p. units 10d
Quartz—Ground, ℔ ton. 14.00@16.00
Rotten Stone—Powdered, ℔ lb. 3¼@3½
Lump, ℔ lb 6@10
Salt—Liverpool, ground ℔ sack. 75@80
Turk's Island, ℔ bush .25@28
Salt Cake—℔ lb. 60@62½
Saltpeter—Crude, ℔ lb. 5¼@5¾
Refined, ℔ lb. 6@8
Soda Ash—Carb., 48% 100 lb. 1.55@1.60
Caustic, 48% 1.50
Soda Caustic, 60% 3.50
" 70% 3.25
" 74-6% 3.25
Sal. English, ℔ 100 lbs. 1⅛@1 3-16
Sal, American, ℔ 100 lbs .90
Nitrate, 100 lbs. 1.80
Strontium—Nitrate ℔ lb. 9@9¼
Sulphur—Roll, ℔ lb. 1¾
Flour, ℔ lb. 2@
Crude Brimstone, 2s., ℔ ton. 22 00@23 00
Crude Brimstone, 3ds, ℔ ton. 20.50@21.50
Talc—Ground French, ℔ lb. 1¼@1½
Domestic, ℔ ton $18@$20
c. i. f. Liverpool, ℔ ton £4 5
Vermillion—American, ℔ lb. 61
English, ℔ lb. 82@85
Vitriol—(Blue), Ordinary, ℔ lb. 5½@5¾
Extra, ℔ lb.
Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 6@6½
Paris, Red Seal, ℔ lb. 6¼@7
* Spot.

THE RARER METALS.

Aluminum—(Metallic), ℔ lb.	$1.50@$2
Sheet, per lb.	2.50
Arsenic—(Metallic), per lb.	.40
Barium—(Metallic), per gram	$4.00
Bismuth—(Metallic), per lb.	2.75
Cadmium—(Metallic), per lb.	1.00
Calcium—(Metallic), per gram	10.00
Cerium—(Metallic), per gram	7.50
Chromium—(Metallic), per gram	1.00
Cobalt—(Metallic), per lb.	6.00
Didymium—(Metallic), per gram	9.00
Erbium—(Metallic), per gram	7.50
Gallium—(Metallic), per gram	140.00
Glucinum—(Metallic) per gram.	12.00
Indium—(Metallic), per gram	9.00
Iridium—(Metallic), per oz.	7.00
Lanthanum—(Metallic), per gr.	10.00
Lithium—(Metallic), per gram	10.00
Magnesium—Per lb.	4.50
Manganese—Metallic, per lb.	1.10
Chem. pure, per oz.	10.00
Molybdenum—(Metallic), per gm.	.50
Niobium—(Metallic), per gram	5.00
Osmium—(Metallic), per oz	65.00
Palladium—(Metallic), per oz.	35.00
Platinum—(Metallic), per oz.	15.00
Potassium—Metallic, per lb	2.8.00
Rhodium—(Metallic), per gram.	5.00
Ruthenium—(Metallic), per gm.	5.50
Rubidium—(Metallic), per gram	2.00
Selenium—(Metallic), per oz.	1.80
Sodium—(Metallic) per lb.	2.50
Strontium—(Metallic), per gm.	.60
Tantallum—(Metallic) per gram	9.00
Telurium—(Metallic) per lb.	5.00
Thallium—(Metallic) per gram.	.25
Titanium—(Metallic) per gram.	2.25
Thorium—(Metallic) per gram.	17.00
Tungsten—(Metallic) per oz.	2.25
Uranium—(Metallic), per lb.	5.00
Vanadium—(Metallic), per gm.	22.00
Yttrium—(Metallic), per gram	9.00
Zirconium—(Metallic), per oz.	65.00

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000	3 50@4.00
Jerseys, ℔ 1,000	5.00@5.50
Up Rivers, ℔ 1000	6 25@6.50
Haverstraw seconds, ℔ 1000	5.50@6.00
Haverstraw firsts, ℔ 1,000	6.25@7.00
Fronts, nominal, ℔ 1000.	
Croton	14.00@16.00
Wilmington	20.00@21.00
Philadelphia	@22.00
Trenton	@22.00
Baltimore	
Building Stone—Amherst freestone, ℔ cu. ft.	95@1.00
Brownstone, ℔ cu. ft.	1.00@1.35
Granite, rough, ℔ cu. ft.	45@1.25
Granite, Scotch ℔ cu. ft.	1.00@1.15
Cement—Rosendale, ℔ bbl	.85@1.10
Portland, American, ℔ bbl	2.15@2.45
Portland, foreign, ℔ bbl.	2.40@2.50
Portland, " special brands	2.60@2.85
Roman, ℔ bbl.	2.75@2.90
Keene's coarse, ℔ bbl.	4.50@5.50
Keene's fine, ℔ bbl.	7.25@8.50
Slate—Purple and green roofing, ℔ 100 ft.	7.00@7.50
Red roofing, ℔ 100 sq. ft.	12.00
Black, roofing, ℔ 100 sq. ft.	4.25@5.50
Lime—Rockland, common ℔ bbl.	1.00
Rockland, finishing, ℔ bbl.	1.20
St. John, com. and finish, ℔ bbl.	.90@.95
Glens Falls, com. and fin., ℔ bbl	.85@1.10
Labor—Ordinary, ℔ day	1.50@2.00
Masons, ℔ day	4.00
Plasterers, ℔ day	4.00
Carpenters, ℔ day	3.50
Plumbers, ℔ day	3.50
Painters, ℔ day	2.50@3.50
Stonesetters, ℔ day	3.50@4.00
Tilelayers, ℔ day	3.50@4.50
Bricklayers, ℔ day	4.00

THE ENGINEERING AND MINING JOURNAL will thank any one who will indicate any other articles which might with advantage be quoted in these tables or who will correct any errors which may be found in these quotations.